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SOCIODEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF ADULTS ADMITTED TO THE PSYCHIATRIC SERVICE OF A TERTIARY HOSPITAL IN THE EMIRATE OF ABU DHABI, UNITED ARAB EMIRATES

Master's dissertation submitted in partial fulfillment of the requirements for the degree of

Master in Mental Health Policy and Service

By

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ABSTRACT

Background: While the prevalence of mental disorders continues to increase globally and most mental health services in Abu Dhabi are delivered by the tertiary psychiatric hospital, scant information is available to inform mental health service development in the emirate. This study described the sociodemographic and clinical characteristics and discharge dispositions of patients who use this service.

Methods: An electronic health record review was conducted on a randomly selected sample (n=285) of patients aged 18 years and older admitted to the psychiatric hospital in Abu Dhabi city from 1 January 2015 to 31 December 2015.

Results: Eighty-seven percent of patients were from Abu Dhabi region, 75.8% were aged 18-34 years and 69.5% were male. The most common discharge diagnoses were mood disorders (29.5%) and psychotic disorders (24.9%), except among Emirati males who were most commonly diagnosed with substance use disorders (48.2%). The psychiatric hospital was most commonly identified as the intended provider of follow-up care (52.6%) and 94% of these patients were scheduled to receive out-patient care delivered by psychiatrists. At least 32.3% of citizens of other countries had discharge plans indicating they required follow-up in their home countries.

Conclusions: With the limited resources available to fund mental health services and given that specialized psychiatric hospitals are costly, understanding those who use the specialized psychiatric service in Abu Dhabi is critical to addressing the current and projected treatment gaps. This study informs the development of an effective local model of service delivery that matches best-fit clinicians with service users across a range of services that are humane, effective and sustainable over the long-term.

Key words: *mental health, psychiatric services, Middle East, clinical, sociodemographic characteristics*

RESUMO

Plano de fundo: Enquanto a prevalência de transtornos mentais continua a aumentar globalmente e a maioria dos serviços de saúde mental em Abu Dhabi são disponibilizados pelo hospital psiquiátrico terciário, pouca informação está disponível para informar o desenvolvimento de serviços de saúde mental no emirado. Este estudo descreveu as características sociodemográficas e clínicas e disposições de alta dos pacientes que utilizam este serviço.

Métodos: Uma revisão de registo eletrónico de saúde foi realizada em uma amostra selecionada aleatoriamente (n=285) dos pacientes com 18 anos ou mais velhos internados no hospital psiquiátrico na cidade de Abu Dhabi, entre 1 de janeiro de 2015 e 31 de dezembro de 2015.

Resultados: Oitenta e sete por cento dos pacientes eram da região de Abu Dhabi, 75,8% tinham uma idade situada entre os 18 e os 34 anos e 69,5% eram do sexo masculino. Os diagnósticos mais comuns eram transtornos do humor (29,5%) e transtornos psicóticos (24,9%), exceto entre homens dos Emirados que eram mais frequentemente diagnosticados com transtornos relacionados com o uso de substâncias. O hospital psiquiátrico foi mais comummente identificado como o provedor pretendido de cuidados de pós-alta (52,6%). Entre estes pacientes, 94% estava programado para receber cuidados ambulatórios, disponibilizado por psiquiatras. Pelo menos 32,3% dos cidadãos de outros países tinha planos de alta indicando que necessitavam de acompanhamento nos seus países de origem.

Conclusões: Com os recursos limitados disponíveis para financiar os serviços de saúde mental, e dado que os hospitais psiquiátricos especializados são caros, compreender aqueles que usam o serviço psiquiátrico especializado em Abu Dhabi é fundamental para abordar as lacunas dos tratamentos atuais e futuros. Este estudo informa o desenvolvimento de um modelo efetivo local de prestação de serviços que corresponda melhor os clínicos com os usuários do serviço, através de uma gama de serviços que são mais humanos, eficazes e sustentáveis a longo prazo.

RESUMEN

Antecedentes: Mientras que a nivel global el predominio de desórdenes mentales continúa en ascenso y la mayoría de servicios de salud mental en Abu Dabi provienen del hospital de atención psiquiátrica terciaria, existen muy pocas fuentes de información que promuevan el desarrollo de los servicios de salud mental en el emirato. Este estudio describe las características clínicas, sociodemográficas y disposiciones de alta hospitalaria de pacientes que utilizan dicho servicio.

Métodos: Se llevó a cabo una evaluación del registro electrónico de salud en base a una muestra aleatoria (n=285) de pacientes de 18 años en adelante, ingresados al hospital psiquiátrico de la ciudad de Abu Dabi durante el período del 1 de Enero al 31 de Diciembre de 2015.

Resultados: El ochenta y nueve por ciento de los pacientes eran de la región de Abu Dabi, el 75.8% se encontraba entre las edades de 18 y 34 años, y el 69.5% era de sexo masculino. El diagnóstico de alta más común era por trastornos del estado anímico, (29.5%) y trastornos psicóticos (24.9%), exceptuando a los emiratíes de sexo masculino que fueron más comúnmente diagnosticados con trastornos derivados del uso de substancias. El hospital psiquiátrico fue usualmente el proveedor designado de cuidados luego de la dada de alta (52.6%). Dentro de estos pacientes, al 94% se le programaron citas de consulta externa para ser atendidos por psiquiatras. Por lo menos un 32.2% de ciudadanos de otros países fueron dados de alta con la indicación de que precisaban seguimiento en sus países de origen.

Conclusiones: Con la limitada cantidad de recursos disponibles para financiar los servicios de salud mental, y tomando en cuenta que el costo de hospitales psiquiátricos especializados es elevado, es vital entender a los usuarios de servicios psiquiátricos especializados en Abu Dabi para abordar las deficiencias en tratamiento, tanto actuales como a futuro. Este estudio da a conocer el desarrollo de un modelo local de prestación de una amplia gama de servicios, donde los profesionales médicos idóneos atiendan a los usuarios que lo necesita, de una forma humana, efectiva y sostenible a largo plazo.

Table of contents

PART 1: BACKGROUND AND REVIEW OF THE EVIDENCE

1.	**Introduction**	1
1.1.	Abu Dhabi geopolitically ……	1
1.2.	Healthcare in Abu Dhabi emirate ……...	3
1.2.1.	Health service regulation ……	3
1.2.2.	Public health service management ……..….	5
1.3.	Abu Dhabi mental health services ……..…….....	6
1.3.1.	Management of psychiatric/ mental health services	6
1.4.	Statement of the problem…….……	8
1.5.	Purpose ……	8
1.6.	Significance of the study …….……....	9
1.7.	Research questions …….….....	9
1.8.	Background/ literature review ……..…	10
1.8.1.	Global burden of disease and Mental and Substance Use Disorders …...	11
1.8.1.1.	World Mental Health Surveys …….……	12
1.8.1.2.	Global Burden of Disease Study …….……	13
1.8.1.3.	Global burden of diseases: Mental and Substance Use Disorders prevalence ……..……..	14
1.8.2.	Mental Health services globally ……..……	15
1.8.2.1.	Optimal mix of mental health services ……..……..	15
1.8.2.2.	Resourcing mental health services …….……	18
1.8.2.3.	Mental health action plan:2013-2020 …….……	18
1.8.3	Regional Burden of Mental and Substance Use Disorders: Arabia ….....	19
1.8.3.1	Arabia's High Income Countries and resources for mental health …...…	22
1.8.3.2.	Mental Health as a regional priority ……	24
1.8.4.	Mental health in the United Arab Emirates …….….	26
1.8.5.	Abu Dhabi emirate and mental health …….……	27
1.8.5.1.	Population……..…	28
1.8.5.2.	Migration ……..……	30
1.8.5.3.	Gender and the role of women ……	33
1.8.5.4.	War and conflict ……	35
1.8.5.5.	Cultural context and perceptions of health and illness ……..….	37
1.8.5.6.	Stigma …….….	39
1.8.6.	Burden of mental disorders, Abu Dhabi …….……	40
1.8.7.	Treatment gap……..……..	43
1.8.8.	Mental health services in Abu Dhabi ……..……	46

Part 2: Personal contribution

2.	**Methods**	50
2.1.	Methodology and study design …….……..	50
2.2.	Study population and sampling …….……..	55
2.2.1.	Setting …….……	55
2.2.2.	Population …….……	56
2.2.3.	Sampling procedure …….……..	56
2.2.3.1.	Unit of analysis …….……	56
2.2.3.2.	Sampling frame …….……	56
2.2.3.3.	Sampling method ……..…….	57
2.2.4.	Measurement ……..……..……..	57
2.2.2.1.	Variables …….……	57
2.3.	Procedure and timeframe ……	61
2.3.1.	Data collection …….……	61
2.3.2.	Timeframe ……..……..	63
2.4.	Data management and analysis …….…….	63
2.5.	Ethical and legal considerations …….……	64
3.	**Results**	**67**
3.1	Sociodemographic characteristics of sample …….…….	67
3.2.	Clinical characteristics of sample …….……..	68
3.2.1.	History of service use ……	69
3.2.2.	Access to an admission unit ……..…..	71
3.2.3.	Course of in-patient stay…….……	73
3.3.	Discharge from in-patient service ……...……	78
4.	**Discussion**	**80**
4.1.	Sociodemographic characteristics of sample …….…….	80
4.1.1.	Age ……...	80
4.1.2.	Gender……..….	80
4.1.3.	Region ……..	81
4.2.	Clinical characteristics of sample ……...	82
4.2.1.	History of service use …….	82
4.2.2.	Access to an admission unit ……	84
4.2.2.1.	Referral source ……..	84
4.2.2.2.	Admission point of departure ……	85
4.2.2.3.	Psychiatric risk assessment ……	86
4.2.3.	Stay in in-patient service ……	88
4.2.3.1.	Restraints ……..	88
4.2.3.2.	Diagnoses……..	91
4.2.3.2.1.	Serious mental disorders ……...	91
4.2.3.2.2.	Substance use disorders ……	92

4.2.3.2.3.	Intellectual disability ……	94
4.2.3.2.4.	Dementia ……	95
4.2.3.2.5.	Psychotropic medications ……...	96
4.2.3.2.6.	Comorbid medical conditions ……	98
4.3.	Discharge ……	100
4.3.1.	Disposition ……	100
4.3.2.	Follow-up post discharge ……...	101
4.4.	Strengths and limitations …….	103
5.	**Conclusions and Recommendations**	**106**
5.1.	Recommendations ……	106
5.2.	Conclusion ……	108
6.	**References**	**110**

List of tables

Table 1.	UAE distribution of population by region (HAAD, 2013) ……..	2
Table 2.	Comparison of global HICS across burden of disease, resources and services ……	19
Table 3.	Causes of DALYs attributable to MSUDs in Arab HICS by gender in 1990, 2005 and 2010 …….	21
Table 4.	Comparison of regional HICS across burden of disease, resources and services ……..…….	23
Table 5.	BSP service usage by year, 2012-2015 ...…….	56
Table 6.	Sociodemographic variables, coding and analyses of question 1…….	58
Table 7.	Clinical variables, coding and analyses of question 2 …….	60
Table 8.	Clinical variables, coding and analyses of question 3 …….	61
Table 9.	Sociodemographic characteristics of patients admitted to the in-patient service ……...	68
Table 10.	History of service use of patients admitted to the in-patient service ...	70
Table 11.	Referral source, access and psychiatric risk of patients admitted to the in-patient service ……..…...	72-73
Table 12.	Restraint use, diagnoses and treatment of patients admitted to the in-patient service ……..	76-77
Table 13.	Discharge disposition and follow-up of patients discharged from the in-patient service ……..	79

List of figures

Figure 1.	Clinical service line development (HAAD, 2013) ……..…	4
Figure 2.	Optimal mix of services for mental health (WHO, 2003) ……..	15
Figure 3.	Population pyramid by age, gender and citizenship (HAAD, 2013) ……	29
Figure 4.	Age, gender and nationality of adults admitted to in-patient service ……	68
Figure 5.	Psychiatric diagnoses by nationality and gender ……	74

List of appendices

Appendix 1.	Map of the United Arab Emirates ……..	132
Appendix 2.	Map of Abu Dhabi regions …….	133
Appendix 3.	Framework for abstracting data from Electronic Medical Records ……...	134-135
Appendix 4.	Intrarater reliability for 28 sets of duplicate data (double abstraction of files) …….	136
Appendix 5.	Protocol for data abstraction ……..	137-139
Appendix 6.	Discharge medication classes prescribed by psychiatric diagnostic group …….	140-141
Appendix 7.	Discharge ICD-9 codes by diagnostic bands ……...	142
Appendix 8.	Psychotropic medications by drug class …….	143

ACRONYMS

BSP	Behavioral Sciences Pavilion
CDS	Conduct Disorder Scale
CHAMPSEA	Child Health and Migrant Parents in South-East Asia
CPT	European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment
DALY	Disability Adjusted Life Years
DASS	Depression Anxiety and Stress Scale
ECT	Electroconvulsive therapy
ED	Emergency Department
EHR	Electronic Health Record
EMRO	Eastern Mediterranean Regional Office
FGM	Female Genital Mutilation
GBDS	Global Burden of Diseases Study
GCC	Gulf Cooperation Council
GP	General Practitioner
HAAD	Health Authority Abu Dhabi
HFU	High Frequency User
HIC	High Income Country
ICD	International Classification of Diseases
IHD	Ischaemic Heart Disease
IMHE	Institute for Health metrics and Evaluation
IRB	Institutional Review Board

LIC	Low Income Country
MDD	Major Depressive Disorder
MENA	Middle East North Africa region
mhGAP	mental health Gap Action Plan
MSUD	Mental and Substance Use Disorder
NRC	National Rehabilitation Centre
OPC	Out Patient Clinic
PHQ-15	Patient Health Questionnaire-15
PTSD	Post-Traumatic Stress Disorder
SCAD	Statistical Centre Abu Dhabi
SCID	Structured Clinical Interview for DSM-IV Axis I Disorders
SEHA	Abu Dhabi Health Services Company
SKMC	Sheikh Khalifa Medical City
SRQ-20	Self-Reporting Questionnaire-20
UAE	United Arab Emirates
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
WHO	World Health Organization
WHO-AIMS	World Health Organization Assessment Instrument for Mental Health Systems
WMHS	World Mental Health Survey
YLD	Years Lived with Disability
YLL	Years of Life Lost

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Part 1: Background and review of the evidence

1. Introduction

The United Arab Emirates (UAE) on the Arabian Peninsula is one of the 22 countries comprising the Middle East (see Appendix 1). A federation of seven emirates inaugurated in 1971, it is a member of the United Nations. The UAE is a constitutional monarchy with each of the emirates governed by its own ruler. There is a unified constitution and the seven rulers together make up the country's highest authority, the Supreme Council of the Federation. National health policy is overseen by the Federal Government's Ministry of Health.

Traditionally a nomadic/ semi-nomadic culture, the country has become one heavily reliant on motor vehicles and domestic help and is experiencing overt physical health challenges associated with largely sedentary lifestyles, smoking and unhealthy diets. The top health care priorities as per the national government include injuries, cardiovascular diseases, diabetes and respiratory illnesses (UAE Ministry of Health, 2012). In 2013, its population was 9,346,000, with 15% younger than 15 years. Relative to the Eastern Mediterranean Region, in which it falls, its population has a higher life expectancy (76 compared to the regional 68 years) as well as a higher healthy life expectancy (67 compared to 58 years). Both its mortality and birth rates are decreasing (WHO country profile, 2015).

1.1. Abu Dhabi geopolitically

Abu Dhabi, where this study is conducted, is oil-rich and the wealthiest of the seven emirates. It has a total population of 2.7 million, of which only 18% is Emirati. Sixty-

nine percent of the Emirati population is younger than 30yrs (Health Authority Abu Dhabi, 2013). Ruled by the Al Nayan tribe, Abu Dhabi has three administrative regions: Abu Dhabi, Eastern and Western (see Appendix 2), all of which are expected to double their populations by 2030.

1. Abu Dhabi city in Abu Dhabi region was originally an island village that is now a cosmopolitan city extending onto the mainland. While the island and surrounding residential populations are expected to shrink, a concurrent rise is anticipated in the areas further from the city hub.

2. Al Ain, the Emirate's second city, is in the Eastern region and is expected to expand into the surrounding rural areas. As part of this expansion, an urban corridor will link Abu Dhabi to Al Ain. The largest concentration of Emiratis is around Al Ain.

3. The least populous is the Western region. HAAD recognizes that specialized services are unequally distributed and that services at primary and secondary levels of care are poorly developed in this region.

In all regions, the population is overwhelmingly expatriate, mostly aged from 20-40 and male.

Table 1. UAE distribution of population by region (HAAD, 2013)

Region	National	Expatriate
Abu Dhabi	15.7%	84.3%
Eastern	28.2%	71.8%
Western	8.8%	91.2%

1.2. Healthcare in Abu Dhabi Emirate

Healthcare is delivered through a public-private mix and is fully funded for nationals, including an international patient care program. Non-Emiratis are not eligible for free healthcare. There is a mandated minimum health insurance scheme for all expatriates whose visas are issued through Abu Dhabi. This is funded by the sponsor and benefits do not extend to those Abu Dhabi workers or residents whose visas are issued by other emirates. This scheme covers basic health services in government hospitals. Additional and/ or specialized services are largely funded out of pocket by the individual user. Health insurance coverage is through one of forty-two payers (HAAD, 2014).

Abu Dhabi government has two bodies accountable for overseeing all health matters:

1.2.1. Health Service Regulation

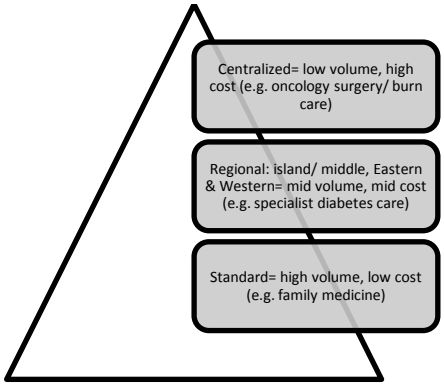
The Health Authority Abu Dhabi (HAAD) regulates policy and licenses health professionals. It envisions a "system encompassing the full spectrum of health-protecting, promoting, sustaining and restoring services across the emirate" (HAAD, 2013). Its 2010-2014 public health priorities were, in order of priority, cardiovascular disease prevention and management, road safety, tobacco control, cancer prevention and control and mental health. In its Health statistics 2013 report, it recognised:

- acute hospital services are occupied with caring for many who require long term services,
- health services are not orientated to promoting patient self-care relating to chronic diseases,
- capacity gaps exist in specialties including emergency medicine, rehabilitation and psychiatry,

- health challenges including increased demands for services related to prevention and treatment of medical diseases like cancer, diabetes, heart disease and neuropsychiatric disorders, and
- the need to expand regional services while concentrating specialized services (HAAD, 2013).

HAAD foresees that capacity will be developed through structuring service delivery relative to volume and cost, as shown in Figure 1.

Figure 1. Clinical service line development (HAAD, 2013)



It explicates a horizontal model of care that is addresses formal health services (flowing from primary through secondary to tertiary) where the health system is seemingly not integrated with related services like education, social or prison systems and where informal levels of health services are not acknowledged (HAAD, 2016). HAAD foresees expanding health services using healthcare professionals, projecting to need 4800 additional doctors and 13000 additional nurses by 2022. It calculates that, due to the high attrition rate in these groups, this equates to 1700 doctors and 2900 nurses per year (HAAD, 2013).

In December 2014 HAAD launched a five- year strategic plan, identifying its priority areas as:

1. integrated continuum of care for individuals (including mental health programs in the community);
2. improving quality of health care (including through supporting research in healthcare);
3. attracting, training and retaining qualified healthcare professional;
4. emergency preparedness;
5. wellness and prevention to improve public health;
6. ensuring value for money and sustainability of healthcare spending; and
7. an e-health program (HAAD, 2014).

This launch was publicized through the media and reported on its website. This was followed by the publication of its Capacity Master Plan (HAAD, 2016).

1.2.2. Public Health Services Management

SEHA (Arabic for "health") is the company that manages the government's healthcare facilities across the emirate (12 hospitals and 57 primary health centers). In total, 65% of all in-patient beds available to the population belong to SEHA, including 100% of psychiatric services in both the Western and Eastern regions, and 75% in the Abu Dhabi region. It has 156 psychiatric admission beds, 123 at Sheikh Khalifa Medical City (SKMC) in the capital and 33 in Al Ain hospital.

1.3. Abu Dhabi mental health services

As of 2013, the UAE has a stand-alone mental health policy/ plan, indicated as being "available and partially implemented" (WHO Mental Health Atlas, 2014). However, this is not available in the public domain. A new mental health act, proposed in 2013 is not yet passed (Sheikh Saud Bin Saqr Al Qasimi Foundation for Policy Research, 2015) and is still not available in draft form in the public domain. The existing mental health law, Federal Law no. (28) of 1981, makes provision for compulsory admission to a psychiatric in-patient service if a psychiatric review board determines a "loss of contact with reality", either alone or in a person with "any other mental disorder, mental retardation or personality disorder" (Al-Hassani, 2015). There is no formal legal process for involuntary admission. Should a person at high psychiatric risk refuse admission, the law requires the police are informed. Only recently have changes to HAAD's policy supported an involuntary admission process that may be initiated by a psychiatrist based upon the psychiatric risk and competency assessments (Elsheikh, 2017).

Little information is available in the public domain on the mental health (or illness) of the population of Abu Dhabi. Nor are there recent direct data available on the prevalence of mental and substance use disorders, mental health service utilization and characteristics of service users, other than those reported by HAAD.

1.3.1. Management of psychiatric/ mental health services

Psychiatric services at SKMC are run out of the Behavioral Sciences Pavilion (BSP), a specialist service within the broader hospital complex. Administratively and financially a part of SKMC, it is licensed by HAAD as a separate hospital. While technically all its 123 beds are listed as acute admission beds, 46 are used for long-term patients admitted

more than five years ago. Of the remaining 77 beds, 20 in the male Chemical Dependency Unit are reserved for male Emiratis only and 14 are in the male Forensic Unit. No in-patient beds are available for children and no specialized forensics or chemical dependency units are available for women who are absorbed into the general acute service (Al Garhy, 2016). In keeping with SKMC's service model, BSP is physician-led. There are 21 psychiatrists (13 are consultants- one each for liaison psychiatrist and children and adolescents).

In addition, BSP runs an Out-patient clinic (OPC) for adults and children and a day center. Referrals to the OPC, accepted from general practitioners (GPs), psychiatrists in private practice and SKMC's liaison psychiatric service, are by scheduled appointment between 0830 and 1500 Sunday to Thursday. Those requiring access without a referral or out of office hours can only do so through the liaison psychiatry service (which accepts referrals from within SEHA's general hospital in-patient and emergency departments). Admission to an acute bed is only via the OPC, Emergency Department (ED) and SKMC general hospital and only psychiatrists have admitting privileges. While a referral pathway exists for accessing in-and out-patient psychiatric services, the reverse is not the case.

The acute service is rendered by psychiatrists, supported by non-psychiatrically trained general nurses. One liaison psychiatric consultant and psychiatric residents constitute the liaison psychiatric service to the three SEHA hospitals in Abu Dhabi and a psychiatric consultant rendering a service to Corniche Maternity hospital. Except for these two services, BSP is neither integrated into general SEHA services nor into other service levels within the current health service. It exists in the absence of a clearly articulated,

well-publicized vision, plan or strategy for mental health services, poorly delineated referral systems, a lack of specialized community mental health services or clearly defined roles and responsibilities of its clinicians towards primary health clinicians and has no clear links with informal mental health services.

1.4. Statement of problem

By 1996 Mental and Substance Use Disorders were responsible for more than 25% of all disability worldwide, 8 times more than heart disease and 20 times more than cancers (Baxter, 2013). By 2010, the Global Burden of Diseases study (GBDS) demonstrated that these disorders were the leading cause of years lived with disabilities worldwide (Whiteford, 2013). Consistent with this picture, the leading cause of disability in the UAE is neuropsychiatric conditions (WHO, 2015). In 2010 HAAD prioritized mental health as one of its top five public health priorities (HAAD, 2010). In 2013 it recognized that a "severe" capacity gap existed within psychiatry and anticipated an overall growth in demand (HAAD, 2013). As was borne out by the results of GBDS 2013, the regional as well as local burden continues to increase (GBDS, 2015). Despite this, little is known about the characteristics of the patients who use this service, making planning to address the treatment gap especially difficult.

1.5. Purpose

The purpose of this quantitative study with a cross sectional, retrospective chart review design is to describe the sociodemographic and clinical characteristics of patients admitted to the mental health service (BSP) of Sheikh Khalifa Medical City. With the

anticipated increase in admissions and the absence of local published data, there is an urgent need to generate baseline information on this population so as to inform the discussion of what constitutes an effective service model and provision of best-fit clinicians for adults with mental and substance use disorders in Abu Dhabi.

1.6. Significance of the study

Epidemiological studies guide the determining of national and local health priorities, as does research into the delivery of services (WHO, 2001). Baxter et al, (2013) speak to the global dearth of population studies, highlighting that "clinically-relevant cases" determine health service planning. Given the existence of a model of care out of sync with WHO's recommendations (WHO, 2003) and the growing global understanding of the enormity of the problem, the absence of epidemiological and service data must be addressed as a matter of urgency to inform the discussion of what constitutes a viable service delivery model and effective access and care by best-fit service providers in the UAE. This is worth serious consideration from stakeholders since, in the absence of adequate, effective, accessible community services, it seems a likely contributor to people presenting in crisis and requiring hospital admission.

1.7. Research questions

Hypothesis: no hypothesis is formulated given the descriptive design of this study.

1. What are the sociodemographic characteristics (age, gender, nationality, marital status, area of residence, referral source, employment status) of adult patients admitted to the in-patient mental health service?

2. What are the clinical characteristics (admission and discharge diagnoses, length of stay, use of physical restraints, medication, ECT, use of BSP services prior to admission) of adult patients admitted to the in-patient mental health service?
3. What are the discharge dispositions and referrals of adult patients admitted to the in-patient mental health service?

1.8. Background

It behoves one to consider mental health and illness in Abu Dhabi within the well-established associations between chronic medical conditions and mental health and broader determinants of mental health.

These health determinants cannot only be viewed at the individual and local levels, but be situated within a broader societal, national and international context, that include:

- global and regional prevalence of mental and substance use disorders, across the lifespan,
- the high levels of conflict and associated displacement and distress in the region and regional political stability,
- migrant labor,
- the role and experiences of women, both within the family and society, and the experiences of individuals within the family,
- culturally situated explanatory models of mental illness,
- stigma, and

- the absence of mental health service integration into primary, secondary and specialist general medical services locally and regionally along with the recognition of the significant contribution made by the informal health service.

1.8.1. The Global Burden of Disease and Mental and Substance Use Disorders (MSUDs)

When combined, Years of Life Lost (YLL), a measure of mortality, and Years Lived with Disability (YLD), a measure of disability, form the Disability Adjusted Life Years (DALY), a compound measure that reflects years of healthy life lost due to a disease or disorder (Murray and Lopez, 1996). Using these measures allows for meaningful comparison across disorders, given that units of description are standardized. Thus, the burden associated with an injury can be compared to that of heart disease and that of Major Depressive Disorder (MDD). This thinking has done much to bring MSUDs to the fore, highlighting the significance of these previously disregarded, but hugely disabling, conditions.

Two key pieces of evolving epidemiological research illuminating the global burden of disease relative to MSUDs are WHO's World Mental Health Survey (WMHS) and the Global Burden of Diseases Study (Murray and Lopez, 1996). Both report on prevalence and use of DALYs to reflect morbidity and mortality. As early as 1990, using the YLD, the initial GBDS demonstrated that five of the ten most disabling conditions were neuropsychiatric conditions (Whiteford et al, 2013) and projections from the WMHS were that Unipolar Depression would be the number one cause of global disability by 2030 (Alonso, 2012).

1.8.1.1. World Mental Health Surveys (WMHS)

While reporting on similar measures, methodologies differ. The WMHS is a cross-national comparative study that reports on the prevalence and severity of mental disorders. One of its aims is to develop capacity through assisting countries that lack research resources and infrastructure to conduct high-quality research. Using standardized interview tools, it allows for assessment of mental disorders (using WHO's Composite International Diagnostic Interview) and, given that the Sheehan Disability Scales are embedded in the interview schedule, role impairment.

Wang et al (2012) demonstrated a 12-month prevalence of mental disorders of 16.7% in High Income Countries (HICS) as opposed to 14.8% in Low Income Countries (LICS). Further, they were able to identify that 24.5% of disorders were "serious" while 37.8% were "moderate" across all studies. They also increased our understanding of the treatment gap which is defined as the "true prevalence rate and the proportion of those who receive any kind of treatment" (Thornicroft and Tansella, 2012). They identified that the global average use of services for mental disorders was 9.0%, with the highest being 18.0% in the USA. Despite some limitations relating to response rates, missing data and possible diagnostic discrepancies, this survey clearly demonstrates that, while the burden associated with mental disorders is huge, treatment is largely neglected around the world. By 2012, this study had been conducted in 28 countries (Alonso, 2012).

Rather than examining the burden, Stein et al, (2013) demonstrated a further value of this study. By using this cross-national data, they were able to explore Post Traumatic Stress Disorder (PTSD), determining that prevalence does not differ between HICS and LICS, that it is more prevalent in males and that it is not related to the type of trauma exposure,

but rather multiple exposures at earlier ages. Considering the degree of conflict and war in the Middle East and the resulting large-scale displacement of its populations in conjunction with its limited mental health services, studies of this nature are critical tools to inform international and national health policies and strategies.

1.8.1.2. Global Burden of Disease Study (GBDS)

The Global Burden of Diseases Study (GBDS) extended across 188 countries and 240 causes of death by 2013 (GBD, 2015), using data largely extracted from various records available within countries. Based on these data, statistical models are used to estimate mortality and morbidity in terms of age and gender so as to provide an overview of the disease burden at country, region and global level. Although definitions have changed over time, categories have increased and reporting has become increasingly refined, care is taken to update previous results relative to the data so as to be meaningful over time. Global burden research does much to shed light on the nature and scope of health challenges, informing planners and researchers alike, not only of what knowledge exists, but also on large-scale gaps needing to be investigated and addressed.

In the GBD 2010 study, Lozano et al (2012) reported that deaths due to communicable diseases accounted for 24.9% of the global burden, injuries (including self-harm) for 9.6% and non-communicable diseases (the category inclusive of mental and substance use disorders) for 65.5%. Using current GDB data, various authors have extracted and reported on sub-sets of data to further expand our understanding e.g. Haagsma et al (2015) who examined injuries.

No study of this size or complexity can be without limitations, both in terms of the quality of data available and how they are collected. However, there is no disputing the

pure size of the study and the expert scrutiny its methodologies and results have been subjected to. And given its value as a tool to inform national and international policy, especially in the absence of good quality local studies, it is a tool of substantial worth.

1.8.1.3. Global Burden of Diseases: Mental and Substance Use Disorders prevalence

Whiteford et al (2013) extracted data from the larger GBD study to examine Mental and Substance Use Disorders (MSUDs) against results of the 1990 study. While cardiovascular disease accounts for the largest proportion of total DALYs (11.9%), it only accounts for 2.8% of YLDs. In contrast, the fifth largest proportion of total DALYs (7.4%) is attributable to MSUDs which accounts for 22.9% of all YLDs. Overall, depressive and anxiety disorders accounts for the largest YLDs (42.5% and 15.3% respectively) and subsequently the largest burden expressed as DALYs (40.5% and 14.6%). In this category, alcohol use disorders account for the largest YLLs (44.1%), but are closely followed by drug use disorders at 41.7%. By far the highest impact is on the age group 10-29 years.

The authors also determine that between 1990 and 2013 the burden of disease for MSUDs increased by 37.6%, largely attributable to population growth and ageing, except for alcohol, opioid and cocaine dependence which cannot be explained by these factors alone. While these statistics are alarming in themselves, Baxter et al (2013) identify gaps in knowledge due to the study's design and posit that, because of these, the study likely under-estimated prevalence. Indeed, Vigo, Thornicroft and Atun (2016) argue that this underestimation amounts to more than one third of the reported burden.

1.8.2. Mental health services globally

It has long been recognized that resources allocated to mental health are out of sync with the needs of populations. Further, that formal mental health services fail to optimally meet the needs of those who would access them. Since the World Health Organization published its 2001 report, "Mental Health: New Understanding, New Hope", much has been done to expand on what is known about the global burden of diseases, including those due to MSUDs.

1.8.2.1. Optimal mix of services

Following on its 2001 publication, WHO published its mental health package which provides guidance addressing needs and priorities across the spectrum of policy and service development. In its module on service organization (WHO, 2003), it highlights that while countries and thus services differ, there remains a combination of services best suited to delivery of mental health services. It describes its "optimal mix" of different mental health services, articulated as a model (Figure 2).

Figure 2. Optimal mix of services for mental health (WHO, 2003)

While epidemiological studies at national and cross-national level may reflect the association between burden of disease and effectiveness of interventions, due to their nature and scope, they cannot answer questions related to service composition and models of effective service delivery. Wang et al (2007), initially reporting on result of the cross-national mental health surveys, highlighted that an initial step in redesigning mental health services for optimal functioning was to document current services. But also, in designing these services, one should analyze the needs of stakeholders other than the services themselves so that these services serve the real needs, not the services and those with vested interests in maintaining the status quo.

In 2007, the Lancet series on global mental health largely addressed itself to the situation and challenges in Low Income Countries (LICS), identifying that mental health was low on national agendas and inaccessible tertiary services consumed much of the scarce financial and human resources (Saraceno et al, 2007). The authors referenced the World Mental Health's 1995 report calling for improvement in the quality of mental health services, its 2001 report recommending a community care model, treatment at primary care level and the linking mental health to other services resources. They also referenced the Institute of Medicine's 2001 report which urged an extension of services to primary health care (Saraceno et al, 2007).

In reviewing mental health systems cross-nationally, Jacob et al (2007) provided data per country. The authors pointed out that while country-level information was available, there were missing data and discrepancies. They identified the UAE as a High-Income Country which spent 3.3% of its gross domestic product (GDP) on health. While this categorization remains true, the reality is that money spent on health occurs in a country

where there are vast disparities in wealth between sectors of the population, including its migrant workforce.

In a related article, Prince et al (2007) argued in support of integrating mental into general health services across levels of care when they highlighted the close links between depression, physical diseases, social stressors and disability. Further, Saxena et al (2007) examined issues of scarcity, inefficiency and inequitable distribution of resources for mental health, reiterating WHO's earlier recommendations that mental health services be accessible, comprehensive, effective, respectful of human rights, equitably distributed and coordinated across and between services and service levels (WHO, 2003).

Eight years on, the arguments have not changed, but rather been refined. Patel et al (2015) summarized the evidence for interventions, both medication and psychosocial, and identified the different service levels where these could be delivered most effectively and efficiently. Similarly, Shidhaye et al (2015) were of the opinion that evidence-based interventions fail, not because of inherent failings of the interventions, but because of the systems within which they are delivered. They argued that, rather than considering interventions in isolation and relative to a disorder, one should recognize that interventions are most effective, efficient and resource-savvy when delivered at the appropriate service level in the setting best suited to it. In both instances a case is made for task sharing, integrating services and delivering mental health services through collaboration.

1.8.2.2. Resourcing mental health services

Given the vast treatment gap, the Balanced Care Model (Thornicroft and Tansella, 2012; Thornicroft and Tansella, 2013), in a model aligned with WHO's optimal mix pyramid, articulates minimum services across three settings consistent with the World Bank's income categorization of countries (i.e. Low, Medium and High). Rather than a blanket prescriptive approach, this model is flexible in that it proposes services commensurate with resources assumed to be available, given countries' differing resources (aligned with income level). All countries are thus assumed to have at least a primary health service that can be developed to better deliver mental health services and some degree of specialist service that can see its emphasis shifted to become a training, support and consultative service for those in primary health delivery who assume the burden of clinical care. Thus, scarce mental health resources are better aligned to support a more accessible, comprehensive model of service delivery.

1.8.2.3. Mental Health Action Plan 2013-2020 (WHO, 2013)

Developed as a roadmap to support delivering appropriate services to all across the lifespan, this plan seeks to guide action related to health promotion, disease prevention and appropriate intervention to address the global burden of MSUDs across four objectives (WHO, 2013). Countries report on outcomes across a standard platform, the Mental Health Atlas, which serves as a regional and local scorecard. Comparisons can also be drawn across income categories. Drawing on a few high-income countries for comparison (Table 2) using Mental Health atlas data (WHO, 2014), it is clear that not all countries report (thus hampering comparison) and that, those who do, adopt different approaches to addressing services. Of the seven countries compared here, only two (Chile

and USA) have complete data and those with gaps in data differ in where the gaps are. The UAE has the highest DALYs, the lowest reported suicide rate, the fewest beds across three categories and has not reported on any of the three mental health staffing indicators.

Table 2. Comparison of global HICS across burden of disease, resources and services

Per 100,00 of the population									
Country	Burden		Financing and human resources				Services		
	DALY	Suicide	MH financing	psychiatrist	nurses	Total MH workers	Mental hospital beds	General hospital beds psych units	Residential beds
France	3,701	12.3		14.1	90.9	158.0	89.6		0.0
Germany	3,604	9.2					52.1	34.0	
UK	3,886	6.2	govt	14.6	67.4	318.9			
USA	4,128	12.1	govt	12.4	4.3	125.2	23.6	11.5	15.2
NZ	3,281	9.6	govt					20.0	18.1
Chile	3,110	13.0	govt	4.7	1.6	16.3	6.5	5.8	9.1
UAE	4,241	3.2					0.8	0.4	0.0

1.8.3. Regional Burden of Mental and Substance Use Disorders: Arabia

In reviewing the region's mental health tradition, Mohit (2001) described a region diverse and ancient in terms of art, culture, history and concepts of health and illness, exposed to both the scientific traditions of the West and the holism of the East; one with a long tradition of medicine and magic and unifying values related to religion and family. Despite possible perceptions about the homogeneity of the "Arab World" or "Middle East", the region is characterized by disparities across a number of spheres, including wealth and the rights conferred on citizens and non-citizens within countries. Within this are complexities related to the role and objectifying of women, interpretation of religious teachings and the value placed on family and/ or family honor.

Little published research is available for the Middle East. Osman et al (2010), reviewing publications on mental health among the members of the Gulf Cooperation Council (GCC), a grouping of the six HICS on the Arabian Peninsula, identified that of 22035 publications from this area in PubMed indexed journals between 1989 to 2008, only 192 (0.87%) were on mental health. Of the 49 relevant UAE studies, 24 were epidemiological and 12 psychometric. Thirty-six of the 49 were conducted in healthcare facilities and ten were community-based.

Not much appears to have changed since then, with Travers et al (2013), in their examination of the literature related to major depression in the Middle East North Africa region, finding only seven publications on the topic between 2009 and 2010, one each from Iraq, Morocco, Oman, Palestine/ Israel and Saudi Arabia and two from Iran. From these, and older studies, they conclude that since physical diseases, stress and trauma are such common risk factors for major depression regionally, there is possibly an associated greater disease burden in the Middle East than in other regions.

Perhaps the most illuminating research in this area is the work of Mokdad et al (2014) in their analysis of the burden of disease, injury and risk factors in the Arab world. Generally, in the region, as per the authors, depression and anxiety are on the increase, with higher prevalence in females than males. Reflecting the global pattern, regional depression prevalence peaks between the ages of 20 and 39 years. The authors categorize countries in the region in terms of wealth. All GCC states meeting the World Bank's criteria for HICS (gross national income per person is $34688, compared to LICS with $523). Considering the disease burden expressed as DALYs in Middle East's HICS over the years 1990, 2005 and 2010 (Table 3), it is clear that major depression is the most

disabling MSUD for both genders. Similar to the global picture, it is higher among women. As opposed to women, where the second most disabling disorder is anxiety, among males it is drug use.

Table 3. Causes of DALYs attributable to MSUDs in Arab HICS by gender in 1990, 2005 and 2010 (ranking for year in brackets)

MALE	1990	2005	2010
	Major Depressive Disorder (6)	Major Depressive Disorder (5)	Major Depressive Disorder (4)
		Drug Use Disorder (9)	Drug Use Disorder (7)
FEMALE	Major Depressive Disorder (3)	Major Depressive Disorder (1)	Major Depressive Disorder (1)
		Anxiety Disorders (8)	Anxiety Disorders (5)

While there is a paucity of mental health epidemiological and service data in the UAE, what is known sounds a clear call for urgent research and action. In 2014 the GBD Mortality and Causes of Death Collaborators reported that by 2013, on a global scale, increasingly death was due to non-communicable diseases, and that deaths due to injuries were increasing, as were those due to drug use disorders. Breaking the 240 causes of death down by region, no MSUDs rank in the top ten for the North Africa Middle East region. When examining the countries in the region, specifically the UAE however, only road injuries, ischemic heart disease (IHD), congenital disorders and strokes claim more lives than self-harm. The 7th leading cause of death is Drug Use Disorders. Gater and Saeed (2015), report that global suicide rates increased by 60% over the past 45 years, that a treatment gap of more than 90% exists in the Eastern Mediterranean Region and that mental disorders' prevalence rates must be reduced as a matter of urgency.

1.8.3.1. Arabia's High Income Countries and resources for mental health

Writing about mental health in the Eastern Mediterranean Region (EMR), Saraceno (2001) noted three priority areas:

1. Human rights (respect for those admitted to mental health facilities and the need to shift the focus from institutionalization to community care);
2. The illegal drug trade and the close relationship between use of these drugs and other diseases like HIV with associated socioeconomic problems;
3. Developing a health system in Afghanistan, given the devastation caused by war.

Fifteen years later, despite global shifts, mental health legislation (the presence of, its content with respect to human rights and the enforcement of it), empowerment of service users and their engagement in developing legislation, financing of mental health and institutionalization are far from ideal (Gater & Saeed, 2015). Illicit drugs are a major contributor to regional mortality and morbidity (GBD, 2013) and the wars in Syria, Libya and Yemen account for much death and devastation. This within the ongoing conflicts generally in the wider Eastern Mediterranean Region and the underlying political instability as evidenced by the so-called Arab Spring.

When comparing the situation among the region's HICS using data from the Mental Health Atlas (WHO, 2014), it is clear that there is a general absence of resources and services relative to global counterparts (Table 4). Despite similar levels of income, the region's wealthiest states clearly differ in terms of resource allocation. While Bahrain and Kuwait are below global averages for psychiatrists and nurses, they are heavily resourced with mental health workers other than designated professionals (doctors, nurses,

psychologists, occupational therapists and social workers). When considering the proportions of different categories of beds against WHO's mental health services model, clearly mental hospital services are over-resourced relative to community-based services.

Table 4. Comparison of regional HICS across burden of disease, resources and services

HICS	Per 100,00 of the population							
	Burden		Human resources			Services		
	DALYs	Suicide	Total Mental Health Workers	Psychiatrist	Nurse	Mental Hospital beds	General hospital psych beds	Residential beds
Global HICS			*18.7*	*6.6*	*31.9*	*30.9*	*11.5*	*9.9*
Bahrain	4,100	7.2	37.0	4.8	22.7	16.8		
Kuwait	3,600	0.9	34.0	3.3	19.2	17.2		
Oman	2,828	1.0	15.8	2.3	12.8	5.6	0.3	
Qatar	4,214	4.6	16.3	2.9	8.8	3.0	0.0	0.0
KSA	2,917	0.4	16.5	2.1	10.5	19.5	0.3	
UAE	**4,241**	**3.2**				**0.8**	**0.4**	**0.0**

Oman (2008), Bahrain (2010) and Saudi Arabia (2010) are the only regional HICS in which the World Health Organization Assessment Instrument for Mental Health Systems (WHO-AIMS) were conducted. Qatar published its national mental health strategy in 2013. This is framed by its National Vision 2030, launched in 2008 and its National Development Strategy 2011-2016 which included a National Health Strategy. Within this, mental health was identified as a key project and the vision is aligned with WHO's model for service delivery (Supreme Council of Health, Qatar, 2013). Given the high level of political engagement in the overall process, a Mental Health Strategy was unveiled in 2013 (Funk and Drew, 2015). Mokdad et al (2016) identify Qatar as one of only two regional countries investing in prevention efforts as a strategy to address the spiraling burden associated with mental health problems.

Saudi Arabia has the most widely-available and accessible published information on this mental health system among the HICS, including publications that map the sociodemographic and clinical characteristics of its service users and report on the mental health system. It has developed its mental health services in line with WHO's optimal service mix and addresses other key aspects of WHO's mental health system components, including policy, information management, financing and human resources, based upon WHO-AIMS (Qureshi et al. 2013). Almutairi (2015) identifies that mental health research priorities include mental illness among women, inequitable distribution of services, barriers to help-seeking and stigma as well as evaluating the effective of interventions.

1.8.3.2. Mental health as a regional priority

Since 2014, WHO's Eastern Mediterranean Regional Office (EMRO) has been actively engaged in supporting the development of regional mental health systems, using the Global Mental Health Action Plan 2013-2020 as a roadmap for action. Challenges identified include:

- most regional polices, where they do exist, are inconsistent with international human rights standards and are not fully implemented;
- legislation is outdated and incompatible with human rights standards;
- service users and care-giver organizations are poorly developed;
- mental health resources (facilities, funding and human) are concentrated in mental hospitals and health promotion and illness prevention strategies are absent;

- the mental health workforce is small and under-qualified to deliver appropriate services (Alwan & Saeed, 2015);
- absence of inter-sectoral collaboration to deliver health promotion, illness prevention and interventions in multiple settings and across different platforms (Rahman, 2015);
- little or no systems for mental health surveillance and information management systems (Chisholm and Dowrick, 2015).

Alwan and Saeed (2015) notes multiple barriers to translating the Global Mental Health Action Plan into practice in this region, including:

- Diverse financial, cultural and national characteristics,
- Widespread national insecurity and humanitarian crises,
- Different stages of economic development reflected in health outcomes, health system performance and health expenditure.

In 2014, regional efforts to develop a framework for scaling up action and knock-on national action plans within the context of the global plan resulted in a set of regional strategic interventions (broadly within the areas of governance, health care, promotion and prevention and surveillance, monitoring and research) that countries were expected to prioritize (WHO EMRO, 2015) and report back on in October 2015 (Gater, Saeed & Rahman, 2015).

1.8.4. Mental health in the United Arab Emirates

When seeking to evaluate a country's mental health system, WHO recommendations can serve as a standard for comparison. In its service organization module (Funk, Saraceno and Pathare, 2003) authors highlight that, commonly, lower income countries are seriously challenged to provide adequate resources (both service and human), while countries with higher incomes are pressed to improve identification of disorders and intervene at primary service level as well as address conflicts arising between different secondary level mental health services. General recommendations for optimal service provision, which are all potentially convertible into measurable indicators, include:

- Devolving services and resources from tertiary to primary levels of care,
- Blocking new admissions to psychiatric hospitals or large psychiatric institutions and replacing them with acute services within general hospitals,
- Reallocating resources to other service levels,
- Integrating mental health services into primary and secondary levels of care,
- Developing capacity in the informal care sector, including through developing advocacy groups and including them in developing and providing services,
- Using a system of financial rewards to encourage a change in the mental health services,
- Using primary and community services to reach under-served communities,
- Training should be extended to include issues relating to psychosocial aspects of life.

World Health Organization is clear that, while each country is unique and thus must determine the ultimate configuration of services based on needs, the broad framework of

the optimal mix of services is universally applicable and that the principles of accessibility, effectiveness, equity, human rights, coordination and continuity of care apply to all. For countries like the UAE and other better-resourced ones, its recommendations include:

- Set priorities based on current prevalence of mental disorders,
- Upskill primary health care service providers through training, supervision and support to deliver a basic package of services,
- Dedicate mental health specialists to deal with referrals from primary health care,
- Establish catchment areas for services and develop pathways to access tertiary care (for users) and support (for providers),
- Develop in-patient beds in general hospitals,
- Partner with NGOs to provide services for children and adolescents,
- Reduce beds in mental hospitals.

1.8.5. Abu Dhabi emirate and mental health

In considering how one meaningfully translates these recommendations into practice in the emirate, one must consider not only the diversity of the population, but also the social determinants of health likely to impact on large portions of the population. Biological and psychological factors impact health- this is reflected in psychiatry's prevailing treatments: biological knowledge related to gene risk and neuro-imaging have contributed to developments in psychotropic treatments while psychologically effective treatments are available. However, the social determinants of health are largely neglected as areas for intervention. Saraceno et al (2009) attribute this to the challenges inherent in

developing resources and interventions outside the area of influence of clinicians. Yet, understanding these factors- and how they are associated with mental health and illness- create opportunities for interventions that are not only reactive, but also pro-active in nature and thus potentially impact future generations. These include poverty, conflict and war, gender roles and income and job security.

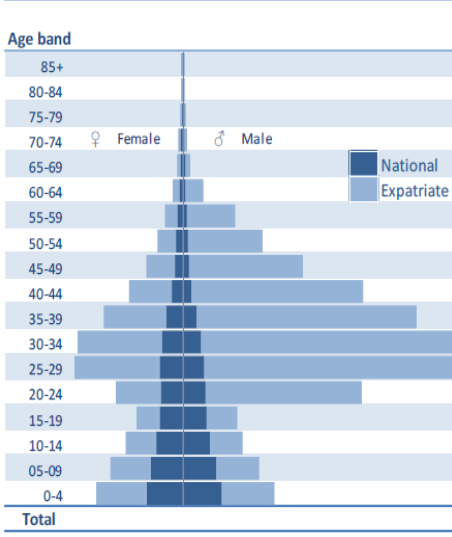
It is also worth noting that the UAE is relatively young, has rapidly transitioned from poverty to wealth and that Abu Dhabi is a sovereign state within a federation.

1.8.5.1. Population

Historically the two most populous areas in the Emirate were the settlements of Abu Dhabi and Al Ain. In the 1970s migrants were largely Arabs from the Middle East, some of whom still remain in the country with the support of their offspring who now work there. Currently the majority of migrant workers are Asian, largely recruited into construction and social development projects (Fargues, 2011; Lori, 2011). This group has been supplemented by workers into the hospitality, health care and domestic labor markets, some of them female (Kahn, 2011). The population curves for Abu Dhabi (Figure 3) differ between the local Emirati and expatriate populations, reflecting what is essentially two separate populations residing within the borders of one country. The median age for Emiratis is 19 years while for expatriates it is 31 years (HAAD, 2015). Among migrant workers, it is heavily skewed between the ages 20 to 59, especially for males. The drop at 60yrs is explained by this being the official retirement age and migrant workers on working visas are no longer eligible for residency status. There are currently no data describing Abu Dhabi's expatriate population by nationality. However,

in the UAE, the most populous nationalities are Indian (28%) and Pakistani (13%), compared to Emirati (11%). Collectively, citizens of China, Sri Lanka, Nepal, Philippines and Bangladesh make up 21%. The largest Arab groups are citizens of Iran (5%) and Egypt (4%). The balance accounts for citizens of all other countries (95 et al, 2017).

Figure 3. Population pyramid by age, gender and citizenship (HAAD, 2013)



Age band	National All	National Male	National Female	National Total	Expatriate Male	Expatriate Female	Expatriate Total
85+	2'222	804	875	1'679	224	319	543
80-84	2'931	887	881	1'768	505	658	1'163
75-79	4'898	1'375	1'163	2'538	1'059	1'301	2'360
70-74	8'709	2'168	2'083	4'251	2'211	2'248	4'459
65-69	14'369	2'809	2'671	5'480	5'175	3'715	8'890
60-64	31'964	3'419	3'902	7'321	17'896	6'746	24'643
55-59	72'431	4'122	5'790	9'911	49'630	12'890	62'519
50-54	108'350	4'743	6'687	11'430	76'921	19'998	96'920
45-49	160'803	6'741	8'651	15'391	117'005	28'408	145'412
40-44	240'306	8'766	11'607	20'373	176'354	43'579	219'934
35-39	322'479	13'939	17'390	31'329	227'278	63'872	291'150
30-34	446'231	19'355	22'270	41'625	318'837	85'768	404'605
25-29	501'623	22'372	24'011	46'383	364'737	90'504	455'240
20-24	254'154	23'591	23'412	47'003	161'384	45'767	207'151
15-19	103'511	24'790	23'621	48'411	30'879	24'221	55'100
10-14	120'720	27'862	27'303	55'165	33'879	31'676	65'555
05-09	152'667	34'351	33'262	67'613	43'903	41'150	85'053
0-4	184'190	39'707	37'990	77'696	54'839	51'655	106'494
Total	**2'732'557**	**241'801**	**253'567**	**495'368**	**1'682'714**	**554'475**	**2'237'189**

While financial security, empowerment, social participation and social support networks are recognized to buffer against mental illness, the converse is true. The migrant population, many isolated from family and community, impoverished and with potentially limited access to adequate nutrition, optimal health services and the basic freedoms associated with more wealthy communities are thus logically at greater risk for developing mental disorders, given their vulnerabilities (WHO, 2004). Due to the diversity within this group, one can but look broadly at these social determinants of mental health in considering not only those currently using mental health services, but also how existing and new services should develop to be most effective. These include:

1.8.5.2. Migration

The annual average growth rate for expatriate males at mid-2015 was 7.7 for males and 9.0 for females as opposed to the 2011 rates of 10.0 and 5.7 respectively (Statistics Centre Abu Dhabi, 2016). Migration may have different, overlapping causes, including fleeing politically-motivated violence or conflict. More than 80% of the UAE's population is expatriate. Workers in the UAE enter under the *kafala* or sponsorship system, and all workers are registered in one of four categories:

- 'White-collar' professionals and their families with the worker having at least a diploma as a higher qualification and specialized in certain fields including consultancy, medical services, and law,
- Private sector employees in administrative or vocational positions and their families,
- Domestic workers and others employed in "non-professional" jobs and their families, including fishermen and taxi drivers,
- All unskilled labor including those in construction (Mahdawi, 2011).

Batniji el al (2014) highlight that many of the mostly Asian migrants to GCC nations encounter practices that differ based on their citizenship status, including exclusion from social services like pension plans as is the situation in the UAE. Rahman (2011), exploring the lot of migrant workers in Saudi Arabia from Bangladesh demonstrated that debts are accrued, often by the family, to finance the migration with the hope of reaping financial gain. This places the family in a precarious financial position and the worker is compelled to remain in a situation in which there is high risk of exploitation, violence and

other violations of human rights, as well as the constant threat of deportation (Shah, 2011).

Despite the strict control of its borders exercised by the UAE and attention paid to internal policing models, no clear data is available on who and where these migrants are, especially those outside of the professional category (Lori, 2011). It also remains unclear how many are trafficked into or through the area as illegal workers, including as sex workers (Viergever, 2015; Mahdawi, 2011).

In seeking to anticipate potential mental health service needs within this population, one must look beyond the region to the point of origin of workers, since one assumes that the experiences of migrants in the region are best investigated outside of it, given the balance of power. Anbesse et al (2009) explored the experiences of 20 female migrant returnees from four countries in the region, including the UAE. A picture emerged of restricted freedom, as well as cultural and social isolation and inhumane treatment. The authors cite earlier studies which indicate unskilled female migrant workers to the Middle East have a two to five times greater prevalence of mental disorders than non-migrants. Researchers differ as to their understanding of causative factors, however. In another Ethiopian study Zeleke and Minaye (2015) used the SRQ-20 and PHQ-15 to investigate mental distress among 1035 migrant returnees from the Middle East and South Africa. Stratifying by gender and using availability sampling, they found that 26.08% had some degree of distress, with a higher prevalence in females. An argument can be made that interventions to address the mental health needs of this population should largely be at the preventative level by sectors other than health, including in the country of origin, who

must develop and enforce laws and practices to regulate the relationship between employee and employer.

While on the surface, this seems a viable argument, one speculates that the political will needed to drive changes in government policy is sorely lacking, given the silence on the rights of their migrant citizens from the nations concerned. And considering the ratio of Emiratis to expatriates, one can deduce that many employers/ sponsors of these migrants are non-Emiratis. Thus, not only is there silence on behalf of vulnerable workers by their governments, but governments of citizens' wealthy enough to serve as sponsors are permitting behaviors of their citizens in other countries that they would likely not tolerate at home.

Even were interventions to materialize, they can only ever be a part of the potential solution since there are always likely to be groups, even in the presence of enforced regulatory practices, often with less economic power and already at higher risk for exploitation from multiple players, whose needs are far broader. And they will come into contact with health, including mental health, services. Their needs for specialized health support will include care related to pregnancy, childbirth, physical and sexual trauma, feelings of shame and guilt, and mental disorders. They will also require sensitized services beyond health as they seek to address threats from violators, uncertain immigrant status, repatriation, and financial challenges as well as reintegrating into their home communities.

The cost of voluntary economic-driven migration clearly extends beyond the financial, including the often-forgotten effects beyond the individual. Graham et al (2014) investigated the lot of those left behind to care for the families of migrants from

Indonesia, Philippines and Vietnam. Using the SRQ-20, 3026 subjects were interviewed, supported by in-depth interviews with 149 participants as part of the larger Child Health and Migrant Parents in South-East Asia (CHAMPSEA) study. They found that mothers who remained while their husbands migrated were more likely to have poorer mental health, and that having a spouse to migrate to the Middle East (as opposed to other parts of Asia or other world regions) was significantly associated with poor mental health, as was having contact with the spouse less than once a week. This has transgenerational implications, given what we know about reduction of risk for mental disorders in the children of adults with mental disorders.

1.8.5.3. Gender and the role of women

The United Nations Population Fund (UNFPA) makes the telling statement "To start with, women and girls have less of almost everything: income, land and other assets, access to health services, education, social networks, a political voice, equal protection under the law, and the realization of basic human rights." (UNFPA, 2015). In the Middle East, women, even those not migrant, appear to enjoy fewer rights than their male counterparts. Largely excluded from political participation in the region, with only 5.7% of all seats in parliament, they are also less likely to be educated or employed and more likely to be the victims of intimate partner violence (Batniji, 2014). The lifetime global prevalence of a women experiencing intimate partner violence (IPV) is 30%- in the Eastern Mediterranean Region it is 37% (WHO, 2013). Mokdad et al (2014) identified that regional women, similar to the global picture, carry a larger burden of disease due to depression. Over the years 1990, 2005 and 2010, the DALYs associated with major

depressive disorders have much increased and in 2010 these are the most disabling of all disorders experienced by regional women.

Eloul, Ambusaida and Al-Adawi (2009), in their review of literature pertaining to depression in the region's women, identified that women increasingly face a struggle related to the traditional role (of home-based wife and mother versus worker in the public environment) as they seek to define themselves in a region that is rapidly modernizing, seemingly ahead of supportive changes in cultural roles and expectations within the family. One possible result of this is the finding that married women have a higher prevalence of depression than those either unmarried or divorced (Hamid et al., 2004 in Eloul, Ambusaida & Al-Adawi**,** 2009). This, given that women are often wives and mothers, has implications beyond just the individual woman in terms of personal suffering and economic impact.

Speaking to this, Wachs et al (2009), in their literature review, describe the negative impact on children in terms of their health, behavior and development. They also identify that prenatal depression increases the risks for postnatal depression and chronic manifestations of mental disorders for the woman as well as increasing the risk for paternal depression. They argue that maternal depression is a human rights and social justice issue within the Convention on the Rights of the Child as well as the Convention on the Rights of Persons with Disabilities.

An additional issue that bears considering is the use of alcohol by pregnant women. Popova et al, (2017) estimated the global prevalence of alcohol use in pregnancy to be 9.8% (CI 95% 8.9-11.1), Fetal Alcohol Syndrome to be 14.6 per 10 000 of the population (CI 95% 9.2-23.3), and that one child with Fetal Alcohol Syndrome is born to one out of

every 67 women who uses alcohol in pregnancy. This translates into 0.2 cases: 10 000 of the general population in the Eastern Mediterranean Region (Tsang and Elliott, 2017). However, these numbers are not representative of sub-populations within the general population which may exhibit marked differences, making this potentially falsely reassuring for health planners in the UAE.

An additional issue, often not discussed, is female genital mutilation (FGM), defined as "the practice of partially or totally removing the external female genitalia or otherwise injuring the female genital organs for non-medical reasons" (UNFPA, 2015a). Practiced across the region, the prevalence among girls aged 15-19, in countries where data is available, is particularly high. Somalia (96.7%), Sudan (84%), Egypt (81%), Ethiopia (62.1%), and Indonesia (51%), from whence some female migrants and long-term residents are drawn, are among the 13 countries with the highest global prevalence (UNFPA, 2015b). Given the different years from which data are drawn, these statistics may not accurately represent the current status. No statistics are available for the UAE's women, either national or expatriate.

Given this regional reality, with the steady increase of the UAE female expatriate workforce, services will need to consider not just Emirati and resident Arab women, many within the context of their families, but also migrant workers who, even if they are wives and mothers, are mainly here without their families.

1.8.5.4. War and conflict

One cannot ignore the impact of conflict on the mental health of the Arab World's population. Karam (2006), in the first WMHS conducted in the Middle East on a population of 2857 (of the targeted 3000), ten years after the civil war officially ended in

Lebanon, found that 37.7% of the population had been refugees, 18.0% had seen a dead body or someone killed or seriously injured, 10.2% had lost a loved one, 8.0% had been a civilian in an “area of terror”, 3.1% had experienced a life-threatening injury and 0.9% were exposed to toxic fumes or explosions. In total, 49% of the population sampled had experienced at least one of these traumatic events. Mokdad et al (2014) link the increased prevalence of depression in the region to conflict and economic factors.

Conflict directly impacts both males and females, commonly resulting in depression, trauma and emotional distress, increased poverty, interrupted education, disturbed patterns of marriage and reproduction and increased ill health. While the direct effects on men are more often related to direct exposure to or engagement in violence, for women greater risk is related to gender-based violence and its consequences (UNFPA, 2015b).

The UAE provides significant financial support to refugees outside the country (UNHCR, 2015) while not offering refuge. Despite this, mental health services need to consider the increased stress burden related to:

- Living in a region that is unstable;
- Being a soldier or the family members of soldiers;
- Expatriates financing family members from conflict areas to reside in the country;
- Expatriates having family members caught up in regional conflicts, and themselves potentially losing property and investments in their home countries;

Irrespective of whether the formal status of refugee is conferred, moving to another country of residence is stressful. In focus groups with women immigrants from the Middle East to Australia around their perceptions of cardiovascular risk, Gholizadeh et al (2011) found that they perceived stress as origination from issues around immigration

and adapting to a different culture. Hilliard et al (2012), in the USA, speculated that in refugee families there may well be high levels of undiagnosed mental disorders resulting in ineffective parental coping and interactions with children.

1.8.5.5. Cultural context and perceptions of health and illness

In trying to understand the challenges experienced by Australians of Middle East heritage in using mental health services, Kayrouz et al (2015) identified cultural barriers inclusive of feelings of shame, fears related to being labeled, distrust in mental health services, language barriers and religious beliefs of illness causation at variance with biomedical models of disease. And Hilliard et al (2012), from the clinician perspective, recommend adapting practice when working with families from the Middle East, recognizing that members of this group may, contrary to their Western counterparts,

- Regard Western medicine practitioners highly and so expect the clinician to be a source of wisdom and authority. Thus, engaging with the person or family and seeking their input and preferences may be interpreted as clinical incompetence, rather than patient-orientated care.
- Focus on the physical rather than mental (perhaps due to stigma associated with mental illness), and so reject therapies other than medication since they are not seen to address the physical presenting complaint,
- See questions posed as part of the assessment as being of a personal nature and thus not to be shared outside the family; and if sharing information, may speak metaphorically rather than using factual language,
- May have an alternative explanatory model of illness, and
- May seek traditional healing as a first resort, but not disclose this to the clinician.

Health (and illness) are both socially defined and expressed. Kleinman (1988) employed the term "explanatory models of illness" to describe our own illness experiences in terms of cause, nature, severity, course and treatment. In seeking to understand how these models play out in the region, one can gain insight from the work of researchers in psychiatry like Okasha, Karam and Okasha (2012) who identified that cultural beliefs around mental illness include possession by evil spirits and becoming ill due to another's envy. Given that traditional/ religious healers are those who deal with the unknown, they are thus the logical place to seek healing for symptoms associated with mental illness. Looking to the beliefs that underpin serious illness, Sinky et al (2015) sought to identify cultural models of breast cancer in Saudi Arabia. Through interviews with women either with, or supporting a woman with, breast cancer to elicit their stories of the illness, researchers found three major themes emerged:

- **That the disease is always fatal and they had no control of it**. Women ascribed the cause of the disease to Allah (God's will and thus out of a human's control). This is situated in religious beliefs around serious illnesses and seen as something that must be accepted. Associated with this is the belief in *'ain* (the evil eye, or jealousy by someone else directed to the woman) as causative. *'Ain* is generated when someone admires the person but fails to negate it by saying *MashaAllah* ("as Allah intended"), thus causing envy and ill will.
- **That the disease threatens a woman's ability to fulfill her traditional role.** Being a wife and mother is highly valued and inextricably bound with a woman's value. If she becomes ill and cannot meet her roles she is potentially seen, by others and herself, as socially less. Given that such emphasis is placed on the

woman-as-nurturer, being in receipt of care, even in a loving family, is viewed by women themselves as proof of their failure.

- **Preferring traditional rather than biomedical treatment.** Given the cause of the disease and its situation within a religious belief structure, the cure is thus also to be found within the traditional. The women in this study sought treatment through prayer, reciting religious scripts and drinking *Zamzam* (holy) water or using it for cleansing.

Similarly, in a selective review of the literature around beliefs of mental illness causation among Muslims, Ciftci et al (2013) found ideas around disease being a punishment from God, due to possession by *jinni* (evil spirit), due to '*ain* (evil eye) or that evil contained in an object can be transferred to the person.

1.8.5.6. Stigma

People with mental illnesses are subjected to stigma and discrimination (Ciftci et al, 2013; Egbe et al, 2014; Sewilim et al, 2015; WHO, 2001). In Muslim communities Ciftci et al (2013) identified that those with symptoms of mental illness:

- may choose not to engage with mental health services so as to escape being labeled,
- given that physical illness is perceived as more socially acceptable, may express their symptoms physically (somatization or conversion),
- may deny symptoms, including to themselves- or families may deny them- due to feeling shamed and wishing to protect the family's honor or participate in social activities highly valued (like being married).

One speculates that among migrants, similar behaviors may occur, even where cultural traditions vary. HAAD used global prevalence figures to model demand in the Emirate (except for substance abuse where it used regional prevalence rates), rather than rely on local data. This decision was based on the conclusion that MSUDs are under-reported-statistical data collected over a six-month period in 2010 showed that only 25,000 people were in need of services compared to the 107,541 indicated using global and regional estimates. They ascribe this discrepancy to stigma attached to mental disorders (HAAD, 2011).

1.8.6. Burden of Mental and Substance Use Disorders in United Arab Emirates

There is a marked absence of recent local studies, despite a professed awareness of the need for mental health research and services. In 2004 neuropsychiatric conditions accounted for the largest disease burden in the UAE (HAAD, 2010). This situation is currently unchanged (WHO, 2015). Reflecting this, mental health was identified as among the top five national research priority areas (Ghaffar, 2010) and among Abu Dhabi's top five health priorities (HAAD, 2010). Four local studies between 2001 and 2006 described the prevalence of mental and substance use disorders in different sectors of the population. These studies, while offering general insights to current researchers, are arguably of limited relevance in guiding service planners today since the health landscape has changed since they were published.

In the first of these, Abou-Saleh, Ghubash and Daradkeh (2001), recognizing that mental disorders are public health problems and that related community studies are essential to planning and developing psychiatric services, used the Arabic translations of a modified

Composite International Diagnostic Interview (CIDI), the Self-Reporting Questionnaire (SRQ-20) and the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID) to determine lifetime and one-week prevalence of mental disorders and distress. This study, conducted in Al Ain, systematically sampled 1696 households and represented 1394 individuals aged 18 years and older. Lifetime prevalence of psychiatric disorders was established as 8.2% (95% CI: 6.7-9.7). Lifetime mental distress was 18.9% (95% CI: 11.5-25.9) and one-week distress was 15.6% (95% CI: 11.8-19.5). They determined an overall prevalence of 11.4% in females compared to 5.1% in males, a ratio of 2.3:1.

Later, Ghubash et al (2004), using a brief sociodemographic tool and an Arabic translation of the Geriatric Mental State Interview (GMS-A3), determined an overall four-week prevalence rate of 20.2% for depression, 5.6% for anxiety and 4.4% for hypochondriasis among older Emiratis. This study used a similar sampling strategy to the earlier study, enrolling 610 participants aged sixty years and older.

Also in 2004, Al-Banna et al determined the point prevalence of conduct disorder among 77 juveniles (60% Emiratis) in four juvenile detention centers using an Arabic translation of the Conduct Disorder Scale (CDS) to be 24.7%. They identified a significant association between the presence of a conduct disorder and having a non-Emirati mother, being the product of a polygamous marriage and low paternal education and employment.

In the only local study to investigate post-partum depression in Emirati women, Green, Broome and Mirabella (2006) determined the prevalence in 125 women who gave birth in Abu Dhabi to be 22% at three months on the Edinburgh Postnatal Depression Scale. A further 22% of women fell in the borderline category. At six months, the prevalence was 12.5% and 19.6% respectively.

Two studies shed light on the mental state of migrant workers in the UAE:

1. Al-Maskari et al (2011) used the Depression Anxiety and Stress Scale (DASS-42) to determine that 25.1% of the sample of 318 male migrants living in labor camps in Al Ain in 2008 met the criteria for depression. They report that 6.3% had thoughts of suicide and 2.5% had attempted it. While the authors attempted to randomly select participants, they recognized that this was not achieved. In addition, the population and location of these camps biased their sample towards lower paid, less educated and skilled agriculture-based workers which makes generalizing these findings difficult.
2. Dervic et al (2012) reported on suicide rates and sociodemographic characteristics of the 594 persons whose deaths were registered as suicides in Dubai from 2003 to 2009. They established rates of 6.3 per 100 000 among expatriates compared to 0.9 in the Emirati population. Among both groups, most victims were male, older than 30 years, single, employed and had secondary levels of education or lower. These results too should be interpreted with caution, given the stigma associated with suicide, that suicide is illegal as well as being viewed as "haram" (religiously unacceptable), and that no register is available to support the uniform collecting and reporting of data. A more realistic reference is likely to be the Global Burden of diseases study which identified self-harm as being the fifth leading cause of death in the UAE out of 240 possible causes (GBD, 2013).

An additional two studies reported specifically on users of the UAE's National Rehabilitation Centre (NRC) in Abu Dhabi, the primary service for treatment of Substance Use Disorders among Emiratis in the UAE. Elkashef et al (2013) reviewed

medical records of the 591 male patients admitted for treatment from 2002 to 2011. These patients had a mean age of 32.4 years and 69.1% were from Abu Dhabi emirate. Intravenous drug users (44%) were more likely to be diagnosed with Hepatitis C that other drug users (11%) and no patients were HIV+ since this is an exclusion criteria for service use. 70% were discharge on no medication to address relapse. Mainly these patients used alcohol (41.3%), prescription medications (20%) and heroin (16%).

In a follow-up study of 250 male service users of the NRC, Alblooshi et al (2016) reported that those aged 19 to 29 years used multiple substances five times more often than other patients (mostly opioids and alcohol) and that the drugs commonly used were heroin, morphine, Tramadol, Pregabalin, Procyclidine, Codeine and Carisprodol.

1.8.7. Treatment gap

Globally the difference between the need for treatment by those with serious mental disorders and its availability is 76%-85%. In HICS it is estimated at 35-50% (WHO, 2013 Action plan). This is despite evidence that the financial cost of failing to act will cost the global community US$ 1.5 trillion per year for the next 20 years (Chisholm et al, 2016) and that every one dollar spent on effective treatment for depression and anxiety yields a four-fold return on investment (Kleinman et al, 2016). The Mental Health Action Plan 2013-2020 (WHO, 2013) sets out targets which specifically aim to address this, including that service coverage will be increased and that promotion and prevention programs will be available across countries.

It is likely that the treatment gap in the Middle East Region is 90% (Saraceno et al, 2015). Mokdad et al (2014) point to the region's poor record of investing in interventions within a public health approach as a contributing factor to the poor performance of health systems generally, noting that even those countries where public health is developed, perform below expectations. In examining the results of the latest GBDS regionally Mokdad et al (2016) note that the urgent, large-scale response needed to address the burgeoning effects of mental and drug use problems is not forthcoming. Indeed, many countries still fail to prioritize the issue at national level.

The Eastern Mediterranean Regional Office, in its roadmap for scaling up services, proposes specific indicators for governance, health promotion, illness prevention and healthcare. These indicators are clearly orientated to human rights within a legislative framework, financing by government for integration of mental health into the country's health system in accordance with WHO's optimal service mix, and inter-sectorial engagement (EMRO, 2015).

Given the huge disparities between different sectors of the Abu Dhabi population, the reality for some may be closer to that of the regional gap of 90%. Factors impacting this, besides those broader issues already highlighted, may also be due to more localized barriers like:

- **Public awareness:** there may not be knowledge within local communities/ households on what the symptoms of mental illnesses are, what services and treatments are available and how to access them;
- **Language as a barrier:** given that the official language of the country is Arabic and the official language of education and commerce is English, many

who may wish to seek access may not be aware of services since they cannot read or speak either of these languages;

- **Community resources are ill-informed:** traditional and religious leaders, school teachers, police services and NGOs may, since excluded from the healthcare network, be unaware of how and when to refer and access help;
- **Gender:** due to cultural restrictions, many women may not seek care on their own or present themselves in public unchaperoned. They may also prefer a female practitioner and one from a similar cultural background which may be in short supply;
- **Resistance from within the formal mental health service:** Abu Dhabi health service, like much of the Middle East, has a reactive rather than proactive approach to mental health (Kronfol, 2012). Public and private services are physician-driven and, as such, presumably provider/ service rather than needs-led. These factors, coupled with a largely Middle Eastern psychiatric workforce, likely contribute to the current status quo.
- **General healthcare providers:** given the lack of integration of health services and the absence of mental health training for community health professionals, general healthcare providers may be failing to adequately recognize that many of the risks associated with general medical conditions are commonly associated with mental disorders, that some of the treatments they prescribe can potentially induce or exacerbate symptoms, and that effective interventions are within their scope. While not specific to Abu Dhabi, WHO-mhGAP (2008) reports a general dearth of official in-service

training available to primary healthcare clinicians related to mental health and illness.

- **Lack of information to inform policy decisions:** there are few recent publications from the UAE or Middle East that shed light on issues around mental health in the UAE or Abu Dhabi. Prevalence studies conducted among Emiratis by Abou-Saleh, Ghubash and Daradkeh (2001) and Ghabash et al (2004) have little relevance today, given the enormous changes in the country over the past ten years. In 2010 the national Ministry of Health accepted responsibility for developing a national research platform and system, aiming to bring together stakeholders from across the spectrum including policy makers, researchers and legislators. It recognized that mental health research was one of the top five UAE priorities, together with research into cancer, nutritional disorders, chronic diseases and road traffic accidents (UAE Ministry of Health, 2010). Little is available publicly to measure progress in how this translates into strategies to build capacity among mental health clinicians to conduct and use research, fund it, or develop a sustainable infrastructure to support aspects of research, be it epidemiological, economic, health systems or intervention- related.

1.8.8. Mental health services in Abu Dhabi

HAAD (2011) identified that one of the six areas with severe capacity gaps in Abu Dhabi was mental health services. When this report was produced, there were 31 beds available in Al Ain and 125 in Abu Dhabi city at SKMC's BSP. Of these, 84 were for males (26 of

then occupied by long-stay patients) and 31 were for females (of which 16 were designated for long-stay use). With population growth, HAAD projected demand to grow between 5.2 and 9.3%. Since this report was produced, no additional dedicated psychiatric admission beds have become available within these services. In addition, the specialist National Rehabilitation Center (NRC) has 18 rehabilitation beds only for adult Emiratis and offers no services to expatriates.

Currently gaps in the existing delivery model include:

- No substance dependence/ abuse services are defined for children, adolescents or expatriates, except for SKMC's BSP which has a consultant psychiatrist OPC;
- No in-patient beds are available for children or adolescents;
- No specialized women's services, except for one consultant psychiatrist OPC;
- No specialized services for older persons, except for one consultant psychiatrist OPC;
- No specialized community services directly to patients or indirectly through liaison consultancy services available to other services like geriatric psychiatric consultation to general hospital home care teams or SEHA in-patients.
- No process of deinstitutionalization of long-term residents of the mental health service.

Of concern, given the projected rise in demand for psychiatric services, without considering additional requirements related to health promotion and disease prevention, was that in 2011 there were only 49 physicians and 16 qualified mental health nurses licensed to work in psychiatry across the entire emirate (HAAD, 2011). Currently there

are 131 licensed psychiatrists in the emirate (HAAD, 2016). To date, issues relating to licensing and privileging of mental health nurse specialists remain unresolved.

In its recently published Capacity Master Plan, HAAD identifies that specialist psychiatric outpatient services are undersupplied by 92% for alcohol and drugs services and by 69% for general psychiatry. There is an 85% undersupply of acute overnight beds for psychiatry coupled with a projected growth rate of 15% (equal to 41 additional beds) per year (HAAD, 2016). Given the absence of legislation, policy and a mental health model or plan one must interpret the gaps identified by HAAD with caution as it is unclear how, in the absence of these, projected needs were determined.

While there are obvious gaps in knowledge in Abu Dhabi and thus an urgent need for local research, evidence and knowledge is available from within the broader global community to support leaders moving forward, both in terms of service development and evaluation. EMRO's regional framework sets out a generic blueprint for action and, together with WHO's Mental Health Atlas, offers metrics that can serve as a framework for evaluation. WHO recommendations on service organization (WHO, 2003) can serve as a standard for comparison. It highlights that, commonly, lower income countries are seriously challenged to provide adequate resources (both service and human), while countries with higher incomes are pressed to improve identification of disorders and intervene at primary service level as well as address conflicts arising between different secondary level mental health services. General recommendations for optimal service provision, which are all potentially convertible into measurable indicators, include:

- Devolving services and resources from tertiary to primary levels of care,

- Blocking new admissions to these services and replacing them with acute services within general hospitals,
- Reallocating resources to other service levels,
- Integrating mental health services into primary and secondary levels of care,
- Developing capacity in the informal care sector,
- Using a system of financial rewards to encourage movement of services,
- Using primary and community services to reach under-served communities,
- Training extended to include issues relating to psychosocial aspects of life.

WHO is clear that, while each country is unique and thus must determine the ultimate configuration of services, the broad framework of its optimal mix of services is universally applicable and that the principles of accessibility, effectiveness, equity, human rights, coordination and continuity of care apply to all. For countries like the region's HICS, WHO's recommendations include:

- Set priorities based on current prevalence of mental disorders,
- Upskill primary health service providers through training, supervision and support to deliver a basic package of services,
- Dedicate specialists to deal with referrals from primary health care,
- Establish catchment areas for services and developing pathways to access tertiary care (for users) and support (for providers),
- Develop in-patient beds in general hospitals,
- Partner with NGOs to provide services for children and adolescents,
- Reduce beds in mental hospitals.

Part 2: Personal contribution

2. Methods

2.1. Methodology and study design

This quantitative study is a cross sectional, retrospective review of the Electronic Health Records (EHR) which describes the sociodemographic and clinical characteristics of patients admitted to the psychiatric service of Sheikh Khalifa Medical City between 1 January 2015 and 31 December 2015.

EHR (or medical chart) review as a way to identify characteristics of hospital populations is a relatively inexpensive methodology that allows the researcher to examine accessible data that is routinely available in the clinical record in a scientific way. In this design, data is retrospectively extracted and used for a purpose for which it was not originally intended i.e. collected for clinical purposes to answer a research question (Worster et al, 2004). Like any research design, it must be of such high quality, both regarding the data and methodology, that the results are reliable, valid and generalizable.

It rests on the assumptions that:

- data are available in the record,
- data are available in a way that allows for abstraction,
- data are an accurate representation of the truth, and that
- the same data, available in different areas of the record, will be consistent (Eder et al, 2005).

This study design has long been used as a tool in epidemiology. It also aids health service planning as it can offer information that supports designing (or re-designing) services for optimal resource use (Katzenellenbogen, Joubert, and Abdool Karim, 1999). Gearing et al. (2006) and Gregory and Radovinsky (2012) recognize that, besides resource value, benefits extend to generating hypotheses for future studies. Gregory and Radovinsky (2012) also highlight the value of this design in gathering data on vulnerable populations, including potential participants in mental health research. Panacek (2007) recognizes, in addition, as advantageous that it can be conducted at the researcher's convenience and allows for rapid research that can form the foundation of more complex studies.

Authors agree that the limitations of this design are related to quality of the documentation by the clinician and missing data (Gearing et al, 2006; Gregory and Radovinsky, 2012; Holmboe, 1998; Panacek, 2007). These constraints of the design are well recognized, with authors over the years attempting to guide researchers on strategies to increase reliability and validity.

Early methodological advice was generated by Eder et al (2005), Findley and Daum (1989), Gearing et al (2006), Panacek (2007) and Worster and Haines (2004) who set out guidelines within the context of a paper medical record system. A decade later, Gregory and Radovinsky (2012), writing about the electronic rather than paper record, declared it a rich source of data in the field of epidemiology and the "gold standard" for eliciting demographic and clinical variables. They highlight that the way data are collected has a corresponding impact on the validity of the study, identifying the following strategies in support of high quality research:

- Developing and testing protocols for collecting data that are clearly defined and logically structured;
- Using coding manuals that are consistent with the order in which data appear in the record and indicate the order of records to be accessed.

Vassar and Holzmann (2013) similarly address themselves to methodological shortcoming. Using the work of Gearing and others, and consistent with Gregory and Radovinsky (2012), they speak to common mistakes made by researchers using this methodology. Their recommendations include the following to support high quality research:

- defining variables operationally,
- using standardized abstraction forms,
- developing clear and thorough abstraction and coding protocols,
- addressing intrarater reliability,
- respecting ethical considerations, including confidentiality.

This research design is employed by researchers in diverse mental health-related situations. Among others, Fekadu et al (2007) used it to identify patterns of service use in Ethiopia, Graca et al (2013) to describe high-frequency service users in Portugal, Onofa et al (2014) to describe characteristics of users of a liaison psychiatry service in Nigeria, DeSousa et al (2015) to describe the population of elderly patients receiving ECT in India and Santini et al (2016) to examine metabolic syndrome in patients on psychotropic medication in Italy. None of these authors describe the methods they used to ensure

integrity of the data during the collection process, manage missing data or reduce variability in data abstraction.

Others researchers have addressed aspects in their reports, including Shim et al (2013) who reported that two abstractors were used in their study of patients with bipolar disorder in South Korea and Lachman et al (2012) who noted a single abstractor was used in their description of adolescent service users with dual diagnosis in South Africa. Neither of these reports provide additional information, however. In 2014 Weinstock et al. offered a more detailed insight into their methodology when they described the characteristics of patients who receive four or more psychotropic medications. They provide information on how data were extracted and by whom, how these were coded and how checked for error. By reporting on these issues, all these acknowledge validity and reliability concerns in the research design. However, none report on them systematically or against the broader methodological framework put forth by those authors who have addressed ways of supporting data accuracy.

If the ability to generalize a study's findings is dependent upon high quality data and sampling, then these should be reported as part of the methodology, just as sampling strategies are (Fox, Hunn and Mathers, 2009). This idea is echoed by Kahn et al (2015) who recognize poor data quality as a "serious threat" to generalizability. In presenting their framework delineating the steps in the data collection cycle, they make 20 recommendations for reporting on the quality of data in retrospective EHR reviews. These include that the origin of data, methods of data capturing and abstracting, definitions of variables and their construction be reported. Further, that for each variable,

descriptive statistics be provided. This framework will guide the reporting of the results of this study.

Zozus et al (2015), rather than looking to recommendations on reporting, look to factors that affect the quality of abstracted data. Noting that no formal guidelines exist to address quality assurance issues which seriously limits this design, they generated an extensive list of factors covering different aspects of the medical record abstraction process through a combination of literature review and Delphi methodologies. These factors will guide methodological decisions in this study (see Appendix 3).

Considering the strategies identified by Findley and Daum (1989), Eder et al. (2005) and Gregory and Radovinsky (2012) to reduce variation and increase generalizability, and consistent with the methodological guidelines set out by Worster et al (2004) and Gearing et al (2006), the following actions were taken in addition to having a complete sampling frame in this study:

- A clear protocol for data abstraction was developed that guided the order of charts to be accessed and steps to follow when data is missing.
- The computerized data capturing tool, with variables in the order they are available from the chart, had the codes for each variable immediately after its name. This first row was frozen to ensure this information was always visible.
- Each variable's code was mutually exclusive and data were recorded as available (e.g. age was recorded as date of birth).
- Data were recorded directly into the abstraction tool.
- Missing data were coded and addressed at the end of data collection.

- Since data abstraction was done by the researcher, intrarater reliability is reported. Every 10th case in the sample was abstracted first. Then, commencing from case 1, data were abstracted resulting in 29 double abstractions. At each double abstraction point, a comparison is available on intrarater reliability (Appendix 4). This allowed for ongoing monitoring of the abstraction process and sought to reduce the possibility of abstractor "drift" related to over-familiarity with documentation patterns and over-confidence by the abstractor. Intrarater reliability is reported on the EHRs that are double-extracted as a % where 100% reliability is 'no variation'.

2.2 Study population and sampling

2.2.1. Setting

SKMC is an 834-bed acute care hospital offering in- and outpatient specialist and emergency services to adults and children across the emirate of Abu Dhabi. When considering the overall service information from BSP's annual clinical portfolios it is clear that service usage is increasing over time both in terms of numbers seen in the Emergency department (ED) and number of acute psychiatric admissions (Table 5). Since 2012, when statistics were first collated, the number of admissions to BSP has almost doubled. The number of ECT sessions, lower in 2014 than 2012, has more than doubled- this despite the ready availability of psychotropic medications in the emirate.

Table 5. BSP service usage by year, 2012-2015

year	total ED to SKMC admissions	total psychiatry consults in ED	total ED to BSP admissions	% of ED consults resulting in admission	total BSP acute admissions	% ED admissions of total BSP admissions	admissions from BSP source	ECT sessions in BSP	SKMC liaison: total SEHA liaison (new visits)
2015	11860	1622↑	993↑	61.2%	1202↑	82.6%↑	209↓	360↑↑	350: 442
2014	11535	1254	856 ↑	61.2%	1118↑	76.6%↑	262↓	165↑	356: 450
2013	10151	1255↑	764↑	60.9%↓	1086↑	70.4%↓	322	125↓	346: 431
2012	no data	1136	728↑	64.1%	1051	76.5%	323	182	352: 462

2.2.2. Population

The population of this study was all adults aged 18 years and older admitted to SKMC's psychiatric service from 1 January 2015 to 31 December 2015 for whom a clinical admission encounter was initiated.

2.2.3. Sampling procedure

2.2.3.1. Unit of analysis

The unit of analysis was the individual electronic medical record.

2.2.3.2. Sampling frame

The Electronic Health Record (EHR) is a fully computerized system linked to the organization's billing system. All patients are accounted for electronically. Within 24 hours of resumption of the electronic service after an interruption, all paper records are transferred into the electronic system. A comprehensive report of admission encounters was generated with clinical file numbers (prefix SK) arranged numerically. All duplicate records, identified by repeat file numbers, were manually

removed by the researcher. Those aged younger than 18 years at their last admission of 2015 were also removed from the report.

2.2.3.3. Sampling method

Simple random sampling was used to identify the required sample size (at a confidence interval of 0.05% and a confidence level of 95%) using a sample size calculator available at http://www.nss.gov.au/nss/home.nsf/pages/Sample+size+calculator . The sample target was 285, calculated on a population of 1100. Each consecutive file in the sampling frame was assigned a research unit number 1- 1100. A table of numbers was generated and corresponding SK file numbers were copied into a master excel spread sheet. The data abstraction point was the last recorded admission to BSP in 2015 (i.e. if three admissions in the year, the last admission).

2.2.4. Measurement

2.2.4.1. Variables

All variables are currently available in the record. Data related to service contact are automatically logged at point of service (e.g. admission) and an electronic time recording is embedded in the system. Other data were abstracted from the clinical notes as per protocol (Appendix 5). The frameworks guiding variable coding and analysis are available for sociodemographic characteristics (Table 6), clinical characteristics (Table 7) and discharge disposition (Table 8).

- **Socio-demographic data** is automatically generated in the system when an individual's national identification card or passport is scanned on admission. Data were abstracted on the following:
    - Gender (as male or female);

- Age (as date of birth) which were collapsed into age as years and, further, into age bands;
- Nationality (as citizen of UAE or expatriate);
- Geographical residential region as per three regions of Abu Dhabi emirate and other areas (as Abu Dhabi / Al Ain/ Western region/ other emirate/ other country).

Table 6. Sociodemographic variables, coding and analyses of question 1

Research question 1: What are the sociodemographic characteristics of adult patients admitted to the in-patient mental health service?			
Variable	**Coding**	**Type of data**	**Analysis**
Gender	0=male/ 1=female	Nominal	Frequencies and percentages
Age	as date of birth	Continuous	Descriptive statistics (parameters, distributions)
Nationality	0=national 1=citizen of other country	Nominal	Frequencies and percentages
Geographical residential region	0=Abu Dhabi city/ 1=Al Ain city/ 2=Western region/ 3=other emirate/ 4=other country	Nominal	Frequencies and percentages

- **Clinical data:** Research tools were not used to verify accuracy of diagnosis, given the objectives of the study. Diagnoses are defined as those made by a SKMC psychiatric consultant. These are recorded as per ICD-9 diagnostic code from a drop-down menu in the EHR. Where the physician at the patient encounter is not a psychiatric consultant, the system requires diagnosis verification by the consultant (designated as Most Responsible Physician) within 24hrs for the record to be processed.

  Psychiatric and risk assessments are conducted at all three access points. No discharge from the psychiatric service can be completed until the EHR

discharge summary is signed off by the consultant. All restraints used in the psychiatric service must be prescribed by a physician. Psychiatric (physical) restraints are applied by a team of trained responders and often used in conjunction with chemical restraint (rapid tranquilization) throughout SKMC.

- Data were collected for the following:
  - Referral source (brought to service by whom);
  - Admission point of departure (point at which decision to admit was made);
  - Main psychiatric diagnosis;
  - Violence and suicide risk levels at admission point of departure;
  - Use of physical and/ or chemical restraint at least once in first 24 hours of admission;
  - ECT received during admission;
  - Length of stay in BSP;
  - Discharge medications prescribed by psychiatrist;
  - Main medical diagnosis at discharge;
  - Number of BSP admissions in five years prior to last admission in 2015;
  - Number of BSP outpatient visits in 6 months prior to last BSP admission;
  - Number of ED visits for any reason in 6 months prior to last BSP admission;
  - Discharge disposition;
  - Referral at discharge.

Table 7. Clinical variables, coding and analyses of question 2

Research question 2: What are the clinical characteristics of adult patients admitted to the in-patient mental health service?			
Variable	**Coding**	**Type of data**	**Analysis**
Referral source	0=self/ 1=family or friend/ 2=police/ 3=other SEHA hospital/ 4=other	Nominal	Frequencies and percentages
Main psychiatric diagnosis at discharge-	Data will be entered directly as diagnostic code and will be collapsed into the following categories: 0=No record/1=290–294/ 2=295/ 3=296/ 4=297/ 5=298/ 6=299/ 7=300/ 8=301/ 9=302/ 10=303–305/ 11=308/ 12=309/ 13=312–316/ 14= 317–319/ 15= 311/ 16=345 (as sometimes entered as primary psychiatric diagnosis in system)/ 17=E958.9/ 18=307/ 19=306/ 20=310	Nominal	Frequencies and percentages
Violence risk level	0=low/1= medium/ 2=high	Ordinal	Frequencies and percentages
Suicide risk level	0=low/1= medium/ 2=high	Ordinal	Frequencies and percentages
Restraints: 24hrs of admission	0=no restraint/ 1=chemical restraint only/ 2=physical and chemical restraint	Nominal	Frequencies and percentages
ECT received during admission	0=yes 1=no	Nominal (dichotomous)	Frequencies and percentages
BSP: Length of stay	In days	Numerical (discrete)	Descriptive statistics (parameters, distributions)
Discharge psychotropic medications	As a name	Numerical	Descriptive statistics (parameters, distributions)
Main medical diagnosis at discharge	Data will be entered directly as diagnostic code and will be collapsed into the following categories: 0= No record/ 1=1-139/ 2=140-239/ 3=240-279/ 4=280-289/ 5= 320-389/ 6=390-459/ 7=460-519/ 8=520-579/ 9=580-629/ 10=630-679/ 11= 680-709/ 12= 710-739/ 13=740-759/ 14=760-779/ 15=800-999	Nominal	Frequencies and percentages
BSP admissions prior to last 2015 admission	As a number count (back to last admission date minus one starting from 2012 i.e. 3 years)	Numerical	Descriptive statistics (parameters, distributions)
BSP outpatient visits in 6 months prior to last BSP admission	As a number count	Numerical	Descriptive statistics (parameters, distributions)
SEHA ED visits in 6 months prior to last admission	As a number count	Numerical	Descriptive statistics (parameters, distributions)

Table 8. Clinical variables, coding and analyses of question 3

Research question 3: What are the discharge dispositions and referrals of adult patients admitted to the in-patient mental health service?			
Variable	**Coding**	**Type of data**	**Analysis**
Discharge disposition	0=Not recorded/ 1=Left Against Medical Advice/ 2=Care of self/ 3=Care of family or guardian/ 4=SKMC's ED/ 5=Care of police/ 6=Care of sponsor	Nominal	Frequencies and percentages
Referral at discharge	0=no appointment or referral named/ 1=BSP psychiatrist/ 2=General practitioner or primary health service/ 3=Prison psychiatrist/ 4=BSP day centre/ 5=BSP community RN/ 6=Follow up in home country/ 7=SKMC's ED/ 8=follow up not applicable/ 9=Refused further care/ 10=Chemical Dependency OPC as needed/ 11= BSP psychometrist/ 12= BSP psychologist/ 13=1+12	Nominal	Frequencies and percentages

2.3. Procedure and timeframe

2.3.1. Data collection

Data were abstracted from each EHR and coded directly into a data collection tool in accordance with the data collection protocol. Psychotropic medications were collapsed into classes (Appendix 7) while psychiatric diagnoses were collapsed into diagnostic categories (Appendix 8). The same researcher (JW) abstracted all data. A maximum of ten files were abstracted per day over a period of six weeks. This prevented the researcher from developing an abstraction pattern and potentially decreased the possibilities of errors. Since data abstraction was done by the researcher, intrarater reliability was monitored. Every tenth case was checked against itself on an ongoing basis at each double abstraction point, making it was possible to identify inconsistencies with assigned codes. Twenty-six variables were selected which included binomial, ordinal and collapsed variables (e.g. age as year

collapsed into age band). Because nominal variables are discrete entities, they are either 100% correct (reliable) or not because the categories are exactly alike and thus overall percentage agreement reflects the degree of reliability. The appropriate measure of intrarater reliability for nominal variables is Cohen's kappa coefficient (Gwet, 2008). Each duplicate pair of data was entered into SPSS-20 in adjacent columns and Cohen's kappa calculated. The overall percentage agreement between entries was 97.4% (see Appendix 4 for reliability of individual pairs).

Through this exercise, the following problems with codes were identified:

- Case 21: Variable named "referral at discharge": identified that no appointment was provided at discharge (code introduced to correct for this)
- Case 91: Variable named "discharge disposition": identified that patient was transferred at discharge to referring hospital (code introduced to correct for this)
- Case 101: Variable named "discharge disposition": identified that no appointment was provided at discharge due to intention to cancel residence visa (code introduced to reflect that person would need to seek follow-up services in home country).

Building in these checkpoints allowed the researcher to identify discrepancies (values less than 1.000) which could be examined and corrected in the data capturing tool. The value of this exercise is demonstrated in the example of case file 91 where kappa was 0.837:

- of the 26 variables assessed, the last was interpreted as 'missing' since it was missing from the first abstraction but available in the second;

- two variables ('suicide risk assessment completed' and 'aggression risk assessment completed' were coded as 'not done due to patient's condition' in the first abstraction and as 'no record' in the second.

However, when one examines case file 161, a challenge of measuring intrarater reliability is demonstrated: there is 100% agreement (no variability) between the abstractions despite the same data not having been recorded in each abstraction.

2.3.2. Timeframe

It was originally anticipated that this study would run over a period of 34 weeks. This study was extended by an additional six months.

2.4. Data management and analysis

SPSS 20 statistical data package was used, and analysis was guided by the type of variable used (Tables 6, 7, 8).

- Descriptive statistics were used to report socio-demographic characteristics.
- For nominal data, analysis of modes and frequency distributions will be reported.
- For categorical data, analysis of mode, mean and frequency distributions; distribution of spread and analysis of variance will be reported.
- Frequency tables and cross tabulations of relevant socio-demographic and clinical (medical and psychiatric) characteristics will be presented.

2.5. Ethical and legal considerations

Three key ethical principles that need to be considered in conducting any research are respect for persons, beneficence and justice. Where:

- *Respect for persons* addresses autonomy (a person competent to make a decision has the right to self-determination and those who are not deemed thus are protected). This includes issues relating to disclosure of information, informed consent and understanding of information so as to be a voluntary participant).
- *Beneficence* (where the researcher is bound both to do no harm, and to prevent harm and do good). In essence, the research must do more good than harm. Here the researcher considers implications of results both on an individual and the larger group, and that the researcher herself is competent to conduct the research and issues related to confidentiality.
- *Justice* (largely addressed as distributive justice) where the researcher is obliged to make benefits available to those who participated and those who shared in the risks share in the benefits. When engaging with a health care service, patients consent to general services and may be required, in addition, to consent to specific procedures. In SKMC, consent by the person in care does not explicitly extend to consenting to the use of any related data for research purposes. They thus have the right to assume that their records are available for clinical purposes only. HAAD (2016), in its guideline, addresses itself to human subject research, but provides no statement on medical record reviews.

No informed consent was obtained from patients whose files were reviewed. Ethical approval was granted by SKMC's Institute Review Board (REC-22.06.2016 [RS-449]).

The benefits of this study extend, not directly to those whose charts were reviewed, but in the potential benefits of informed decisions on the current mental health service that relate to increased access, services re-orientated to the needs of users and communities and in the furtherance of the research agenda around mental health in this under-researched field. A risk to participants exists in that, since the data was not anonymized at source, potentially individuals or groups can be identified. To this end, the following actions were taken in this study:

- Written ethical approval was obtained both from SKMC's Institutional Review Board (IRB) prior to commencement;
- No data were collected that identifies, or may be used, through deduction to identify, specific individuals or groups. Possible identifiers-by-deduction included:
    - Unique EHR system identifiers: none were abstracted,
    - Nationality: only the data "Emirati" and "Citizen of other country" were abstracted as opposed to country or WHO regions,
    - Health insurance coverage: given that insurance package is associated with income, no data were abstracted.

To protect confidentiality of patients' whose records were reviewed,

- Only one abstractor, the researcher, was used and had access to the data;

- EHRs were only accessed from a clinical office computer which meets SEHA's requirements for protection of patient confidential information;
- To protect integrity of the data and protect against loss, the data abstraction tool and related records were on the SEHA network, as was the master list that contained the patient's clinical file number as a reference. Both these documents were password protected. The data abstraction tool contained no identifiers. Rather, the serial unit number (1-279) was used with reference to the master list, effectively rendering these data anonymous. Since this file was backed up on the researcher's USB, it was password protected and the USB not removed from the SEHA office.
- Electronic data will be retained for two years after completion of the study to allow for HAAD auditing. No paper documentation will be generated in this regard. Should the study be audited, the auditor will only be allowed access via the IRB and, as part of the process, will be directly observed by an IRB member when reviewing all documents.
- Research data and materials were available for discussion with the researcher's supervisor and for purposes of examination. These may be used as part of the publication process. No additional abstraction or analysis of the data will be conducted beyond those set out in this study without the written approval of the IRB.

3. Results

Results of the study will be shared with:

- The university where the researcher is currently a post-graduate student, both in the form of a written thesis and as an oral defense thereof;
- Senior hospital leadership of SKMC where the study is being conducted;
- The IRB (in summary) as part of the requirement for ethical approval;
- Clinicians and service managers in SKMC through the existing Continuing Medical Education Program, a series of open public lectures;
- Through the reporting of the study, either as a poster or orally if accepted for a conference presentation;
- Through the publishing of the study as a journal article, if accepted for print.

Of the total population whose medical records were eligible for inclusion in this study, none were excluded. There were no missing records. All records were reviewed in accordance with the stated protocol. Given the two distinct populations (UAE citizens versus citizens of other countries), results are presented along these lines. Where gender differences are relevant, these are presented against the background of citizenship.

3.1. Sociodemographic characteristics of the sample

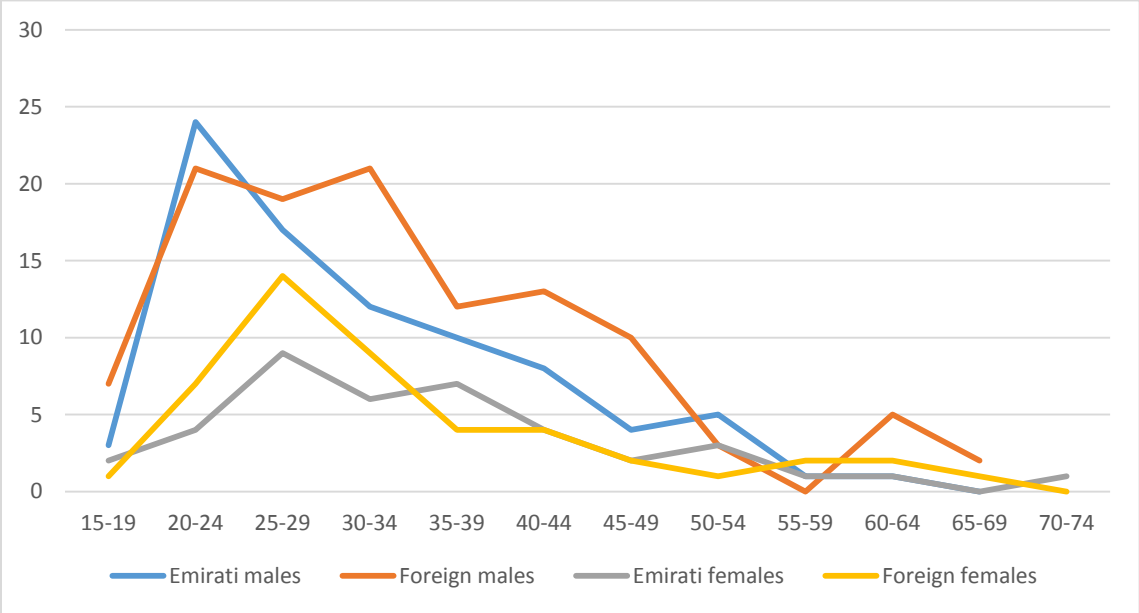
Of all patients admitted, 198 (69.5 %) were male. People with mental health admissions were typically younger (mean age 33.5, SD=11.5, range 18-76) and lived in Abu Dhabi region. The study participants' socio-demographic characteristics are provided in Table 9. Ten patients (3.5%) were from the Western region.

Table 9. Sociodemographic characteristics of patients admitted to the in-patient service, n (%)

Nationality			Gender Male	Female
Citizen of UAE	Region	Abu Dhabi region	69 (24.2%)	31 (10.9%)
		Al Ain region	5 (1.8%)	4 (1.4%)
		Western region	3 (1.1%)	2 (0.7%)
		UAE, another emirate	8 (2.8%)	3 (1.1%)
		Total	85 (29.8%)	40 (14.0%)
Citizen of other country	Region	Abu Dhabi region	106 (37.2%)	42 (14.7%)
		Al Ain region	0 (0.0%)	1 (0.4%)
		Western region	3 (1.1%)	2 (0.7%)
		UAE, another emirate	1 1 (0.4%)	0 (0.0%)
		Other country	3 (1.1%)	2 (0.7%)
		Total	113 (39.6%)	47 (16.5%)
		Total	198 (69.5%)	87 (30.5%)

Most commonly patients admitted were younger irrespective of citizenship, with 69.1% (n=60) of females and 65.7% (n=130) of males aged 20-39 years (Figure 4).

Figure 4. Age, gender and nationality of adults admitted to in-patient service



3.2. Clinical characteristics of sample

Clinical characteristics of the sample were examined looking at the person's previous interaction with services, access to the acute psychiatric service, length of stay (LOS) within the service, discharge and follow-up. The sample is described against the

variables gender and nationality to support an understanding of service user characteristics.

3.2.1. History of service use

Most patients had not been admitted to BSP in the five years prior to the index admission (n= 195, 68.4%). Of the 90 who were admitted in this period, only one was admitted to both the Al Ain and BSP service. Of all those admitted, 31 (34.4%) had one to two admissions.

The remaining fifty-nine met the criteria for frequent users i.e. had at least two, exclusive of the index admission (mean number of admissions 4.3, SD=3.3, range 2-18). Fifty-one of the 59 had at least two admissions within the three years prior to their index admission. Among Emiratis, who accounted for 125 (43.9%) of the total number of admissions, 34 met the criteria for frequent service use. Twenty-one of the 85 male Emiratis admitted (24.7%) fell into this category, while 13 of the 40 female Emiratis (32.5%) did. Forty-seven of the 90 readmitted patients (52.2%) had been discharged from the service within the previous six months.

A minority of patients used SEHA emergency departments in the six months prior to admission (n= 107, 37.5%). These patients had a mean of 3.4 visits (SD=4.0, range 1-23).

Table 10. History of service use of patients admitted to the in-patient service

Previous admission to psychiatric service			
Nationality		Gender	
		Male	Female
Citizen of UAE	No	55 (19.2%)	21 (7.4%)
	Yes, BSP only	6 (2.1%)	19 (6.7%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	No	83 (29.1%)	36 (12.63%)
	Yes, BSP only	29 (10.12%)	11 (3.9%)
	Yes, BSP & other	1 (0.4%)	0 (0.0%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)
Frequency of use in last five years (including index admission)			
Nationality		Gender	
		Male	Female
Citizen of UAE	Nil previous	55 (19.2%)	21 (7.4%)
	1-2 admissions	9 (3.2%)	6 (2.1%)
	3 or more	21 (7.4%)	13 (4.6%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	Nil previous	83 (29.1%)	36 (12.6%)
	1-2 admissions	11 (3.9%)	5 (1.8%)
	3 or more	19 (6.7%)	6 (2.1%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)
Discharge from psychiatric service within previous six months			
Nationality		Gender	
		Male	Female
Citizen of UAE	No	67 (23.5%)	28 (9.8%)
	Yes, BSP only	18 (6.3%)	12 (4.2%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	No	100 (35.1%)	43 (15.1%)
	Yes, BSP only	13 (4.6%)	4 (1.4%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)
SEHA Emergency Department presentations within previous six months			
Nationality		Gender	
		Male	Female
Citizen of UAE	Nil	39 (13.7%)	20 (7.0%)
	1-3	30 (10.5%)	16 (5.6%)
	4 or more	16 (5.6%)	4 (1.4%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	Nil	89 (31.2%)	30 (10.5%)
	1-3	18 (6.3%)	17 (6.0%)
	4 or more	6 (2.1%)	0 (0.0%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)

3.2.2. Access to an admission unit:

Most commonly, patients were brought for assessment by friends, family and colleagues (n=131, 46.0%). Overall, the second most common referral source was the police (n=74, 26%). However, this was the most common route by which Emirati males accessed the service. Twenty-seven patients (9.5%) presented on their own seeking help (eleven of whom were diagnosed with Mood [affective] disorders, eight with Mental & behavioural disorders due to psychoactive substance, seven with Neurotic, stress-related and somatoform disorders and one with Schizophrenia, schizotypal and delusional disorders).

Access to an admission bed was primarily through SKMC's emergency department (n= 195, 68.4%) or through SEHA's acute hospital liaison service (n=42, 14.7%). Among Emirati females and expatriate males and females, admissions through ED as a percentage of total admissions were 70.0%, 74.3% and 76.6% respectively. Only 55.3% of Emirati males were admitted via ED. An additional 24.7% were admitted as a result of a court order (one with a diagnosis of Delusional disorder, one with Alcohol dependence syndrome, eight with Drug dependence and 11 with Nondependent abuse of drugs).

The initial assessment by the psychiatrist includes a tool to document psychiatric risk. Identifying risk factors generates risk scores to guide the decision to admit. Aggression/ violence risk was not recorded for 101 (35.4%) patients while suicide/ self-harm risk was not recorded for 108 (37.9%) patients. For 14 patients (13.9%) this was indicated by the psychiatrist as due to the patient's condition.

Table 11:. Referral source, access and psychiatric risk of patients admitted to the in-patient service

Referral source			
Nationality		Gender Male	Female
Citizen of UAE	Self	9 (3.2%)	5 (1.8%)
	Family/ friend/ colleague	28 (9.8%)	18 (6.3%)
	Prosecutor/ court order	36 (12.6%)	5 (1.8%)
	SEHA, not SKMC (Liaison)	4 (1.4%)	5 (1.8%)
	SKMC (Liaison)	5 (1.8%)	5 (1.8%)
	Other hospital (not SEHA)	3 (1.1%)	1 (0.4%)
	Airport police	0 (0.0%)	0 (0.0%)
	Other	0 (0.0%)	1 (0.4%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	Self	6 (2.1%)	7 (2.5%)
	Family/ friend/ colleague	64 (22.5%)	21 (7.4%)
	Prosecutor/ court order	22 (7.7%)	11 (3.9%)
	SEHA, not SKMC (Liaison)	11 (3.9%)	2 (0.7%)
	SKMC (Liaison)	5 (1.8%)	3 (1.1%)
	Other hospital (not SEHA)	1 (0.4%)	2 (0.7%)
	Airport police	4 (1.4%)	1 (0.4%)
	Other	0 (0.0%)	0 (0.0%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)
Admission point of departure			
Nationality		Gender Male	Female
Citizen of UAE	ED	47 (16.5%)	28 (9.8%)
	BSP clinic, booked	2 (0.7%)	0 (0.0%)
	BSP clinic, walk-in	7 (2.5%)	2 (0.7%)
	SEHA (Liaison, SKMC)	8 (2.8%)	10 (3.5%)
	From court/ jail	21 (7.4%)	0 (0.0%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	ED	84 (29.5%)	36 (12.6%)
	BSP clinic, booked	3 (1.1%)	2 (0.7%)
	BSP clinic, walk-in	8 (2.8%)	3 (1.1%)
	SEHA (Liaison, SKMC)	18 (6.3%)	6 (2.1%)
	From court/ jail	0 (0.0%)	0 (0.0%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)
Psychiatric risk on initial assessment: Aggression/violence			
Nationality		Gender Male	Female
Citizen of UAE	No record	30 (10.5%)	16 (5.6%)
	Patient condition prevents	3 (1.1%)	1 (0.4%)
	Low	43 (15.1%)	19 (6.7%)
	Medium	7 (2.5%)	3 (1.1%)
	High	2 (0.7%)	1 (0.4%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	No record	39 (13.7%)	16 (5.6%)
	Patient condition prevents	6 (2.1%)	4 (1.4%)
	Low	64 (22.5%)	26 (9.1%)
	Medium	2 (0.7%)	1 (0.4%)
	High	2 (0.7%)	0 (0.0%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)

Table 11 (continued): Referral source, access and psychiatric risk of patients admitted to the in-patient service

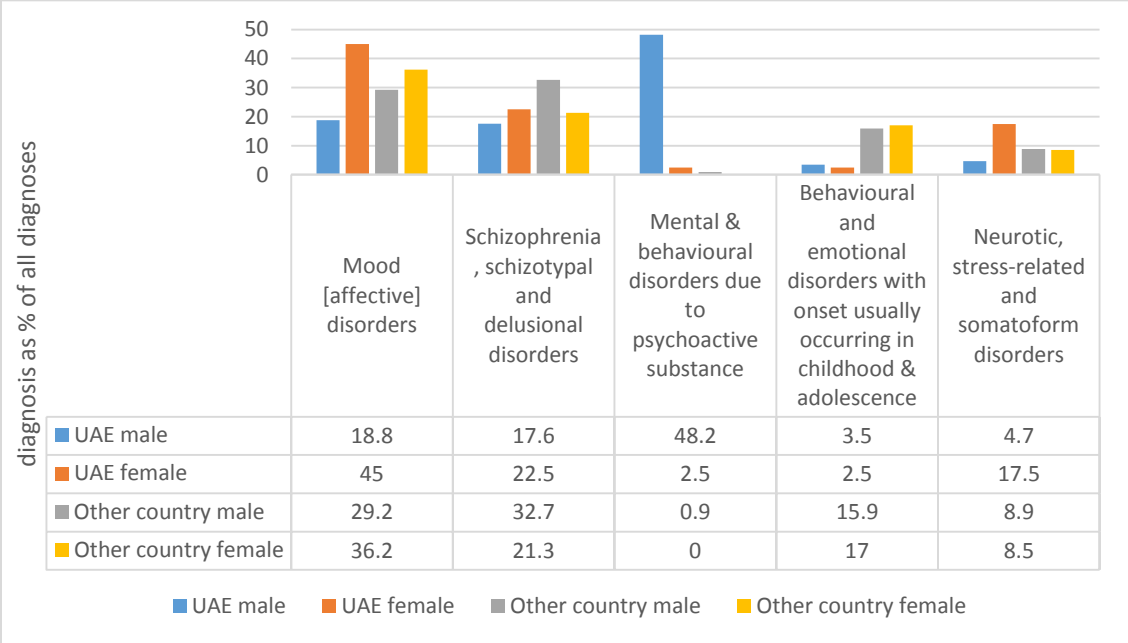
Psychiatric risk on initial assessment: Suicide			
Nationality		Gender Male	Female
Citizen of UAE	No record	32 (11.2%)	16 (5.6%)
	Patient condition prevents	3 (1.1%)	1 (0.4%)
	Low	48 (16.8%)	17 (6.0%)
	Medium	2 (0.7%)	5 (1.8%)
	High	0 (0.0%)	1 (0.4%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	No record	43 (15.1%)	17 (6.0%)
	Patient condition prevents	6 (2.1%)	4 (1.4%)
	Low	54 (18.9%)	23 (8.1%)
	Medium	8 (2.8%)	3 (1.1%)
	High	2 (0.7%)	0 (0.0%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)

3.2.3. Course of in-patient stay

Patients had a mean length of stay of 16.1 days (SD=18.1), ranging from less than one full day to 103 days. Within 24 hours of admission into the service, 34 patients (11.9%) were restrained- 20 with a combination of chemical and physical, thirteen only chemically, and one only physically (Table 12).

Mood [affective] disorders (n= 84, 29.5%), Schizophrenia, schizotypal and delusional disorders (n= 71, 24.9%), Mental and behavioural disorders due to psychoactive substances (n=43, 15.1%), Behavioural and emotional disorders with onset usually occurring in childhood and adolescence (n=30, 10.5%) and Neurotic, stress-related and somatoform disorders (n= 25, 8.8%) were the most common discharge psychiatric diagnoses, collectively accounting for 88.8% of diagnoses (Figure 5).

Figure 5. Psychiatric diagnoses by nationality and gender



Among those with Mood [Affective] disorders, the majority (n=69, 82.1%) were diagnosed with Episodic Mood Disorder. Of the 43 patients diagnosed with substance-related disorders, the majority (86%) were diagnosed with drug-related disorders while six had a diagnosis related to alcohol misuse.

Six patients with diagnoses indicative of mental retardation were all younger than 30 years (mean age 24.2 years, SD=3.7, range 19-29) and five had secondary psychiatric diagnoses (one with Schizophrenic disorder, two with Other nonorganic psychoses, one with Anxiety, dissociative and somatoform disorders and one with Disturbance of conduct not elsewhere classified).

Forty-six patients were not discharged on medication for their psychiatric condition. The majority (n= 239, 83.9%) received between one and six psychotropic medications.

Medications are described against the discharge diagnostic categories in Appendix 6. A minority of patients (n=11, 3.9%) received ECT. All eleven were discharged on at least one psychotropic medication.

The majority of patients had no co-morbid medical diagnoses (n=196, 68.8%). Twenty-three patients (7%) were admitted with a diagnosis of Suicide and self-inflicted behavior (ICD 9 code E958.9). The most common medical diagnoses at discharge were Endocrine, nutritional and metabolic diseases and immunity disorders (n=20, 7.0%) and Diseases of the circulatory system (n= 20, 7.0%), while six patients (2.1%) had diagnoses categorized as Injury and poisoning and a further six (2.1%) had a combination of specific diagnoses of diabetes co-morbid with a cardiac disorder.

Table 12: Restraint use, diagnoses and treatment of patients admitted to the in-patient service

Restraints used in first 24 hours of admission			
Nationality		Gender	
		Male	Female
Citizen of UAE	No restraint	78 (23.4%)	36 (12.6%)
	Chemical restraint only	0 (0.0%)	2 (0.7%)
	Physical & chemical restraint	7 (2.5%)	2 (0.7%)
	Physical restraint only	0 (0.0%)	0 (0.0%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	No restraint	94 (33.0%)	43 (15.1%)
	Chemical restraint only	7 (2.5%)	4 (1.4%)
	Physical & chemical restraint	11 (3.9%)	0 (0.0%)
	Physical restraint only	1 (0.4%)	0 (0.0%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)
Main psychiatric diagnosis at discharge			
Nationality		Gender	
		Male	Female
Citizen of UAE	Schizophrenia, schizotypal and delusional disorders	15 (5.3%)	9 (3.2%)
	Mood [affective] disorders	16 (5.6%)	18 (6.3%)
	Mental & behavioural disorders due to psychoactive substance	41 (14.4%)	1 (0.4%)
	Behavioural & emotional disorders with onset usually occurring in childhood & adolescence	3 (1.1%)	1 (0.4%)
	Neurotic, stress-related and somatoform disorders	4 (1.4%)	7 (2.5%)
	Total	79 (27.7%)	36 (12.6%)
Citizen of other country	Schizophrenia, schizotypal and delusional disorders	37 (13.0%)	10 (3.5%)
	Mood [affective] disorders	33 (11.6%)	17 (6.0%)
	Mental & behavioural disorders due to psychoactive substance	1 (0.4%)	0 (0.0%)
	Behavioural & emotional disorders with onset usually occurring in childhood & adolescence	18 (6.3%)	8 (2.8%)
	Neurotic, stress-related and somatoform disorders	10 (3.5%)	4 (1.4%)
	Total	99 (34.7%)	39 (13.7%)
	Total	178 (62.5%)	75 (26.3%)

Table 12 (continued): Restraint use, diagnoses and treatment of patients admitted to the in-patient service

Psychotropic medication at discharge: drug count			
Nationality		Gender Male	Female
Citizen of UAE	Nil prescribed	30 (10.5%)	5 (1.8%)
	one drug	18 (6.3%)	10 (3.5%)
	two drugs	16 (5.6%)	11 (3.9%)
	three drugs	10 (3.5%)	10 (3.5%)
	four drugs	10 (3.5%)	3 (1.1%)
	five drugs	0 (0.0%)	0 (0.0%)
	six drugs	1 (0.4%)	1 (0.4%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	Nil prescribed	5 (1.8%)	6 (2.1%)
	one drug	31 (10.9%)	12 (4.2%)
	two drugs	41 (14.4%)	15 (5.3%)
	three drugs	23 (8.1%)	12 (4.2%)
	four drugs	12 (4.2%)	2 (0.7%)
	five drugs	1 (0.4%)	0 (0.0%)
	six drugs	0 (0.0%)	0 (0.0%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)
Electroconvulsive therapy administered			
Nationality		Gender Male	Female
Citizen of UAE	No	83 (29.1%)	38 (13.3%)
	Yes	2 (0.7%)	2 (0.7%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	No	109 (38.2%)	44 (15.4%)
	Yes	4 (1.4%)	3 (1.1%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)
Main medical diagnosis at discharge (most common)			
Nationality		Gender Male	Female
Citizen of UAE	Endocrine, nutritional & metabolic diseases & immunity disorders	4 (1.4%)	9 (3.2%)
	Diseases of the circulatory system	4 (1.4%)	1 (0.4%)
	Diabetes and a cardiac disorder	4 (1.4%)	2 (0.7%)
	Injury and poisoning	2 (0.7%)	1 (0.4%)
	Total	14 (4.9%)	13 (4.6%)
Citizen of other country	Endocrine, nutritional & metabolic diseases & immunity disorders	6 (2.1%)	1 (0.4%)
	Diseases of the circulatory system	7 (2.5%)	3 (1.1%)
	Diabetes and a cardiac disorder	0 (0.0%)	0 (0.0%)
	Injury and poisoning	2 (0.7%)	1 (0.4%)
	Total	15 (5.3%)	5 (1.8%)
	Total	29 (10.2%)	18 6.3%)

3.3. Discharge from in-patient service

Most patients were discharged into the care of their family/ guardian (n= 93, 32.9%) or the police (n= 72, 25.3%). Forty-seven (16.5%) left against medical advice. Among the 259 patients with a discharge plan, 145 (56.0%) were referred to a BSP psychiatrist as opposed to three (1.2%) who were referred to a family doctor and a further three (1.2%) to a BSP psychologist. Of the 146 expatriates with documented plans indicating a need for mental health service follow-up, approximately one third (n=51, 34.9%) were noted to be returning to their own country. All of these patients were discharged on psychotropic medication.

Of the 154 patients who received a follow-up appointments at BSP, fifty-six of the seventy-seven Emiratis (74.5% of males and 70.0% of females) kept these. Among the seventy-seven citizens of other countries similarly accommodated, 65.4% of males and 76.0% of females kept their follow-up appointments (Table 13). Within the current system it is not possible to identify the reasons why patients were lost to follow-up.

Table 13. Discharge disposition and follow-up of patients discharged from the in-patient service

Discharge disposition			
Nationality		Gender Male	Female
Citizen of UAE	Documentation incomplete	5 (1.8%)	5 (1.8%)
	Left against medical advice	17 (6.0%)	12 (4.2%)
	Self	2 (0.7%)	3 (1.1%)
	Family/ guardian	24 (8.4%)	17 (6.0%)
	Police	36 (12.6%)	2 (0.7%)
	Sponsor	0 (0.0%)	0 (0.0%)
	Acute medical service	1 (0.4%)	1 (0.4%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	Documentation incomplete	14 (4.9%)	2 (0.7%)
	Left against medical advice	10 (3.5%)	8 (2.8%)
	Self	8 (2.8%)	5 (1.8%)
	Family/ guardian	37 (13.0%)	16 (5.6%)
	Police	22 (7.7%)	12 (4.2%)
	Sponsor	20 (7.0%)	4 (1.4%)
	Acute medical service	2 (0.7%)	0 (0.0%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)
Referral at follow-up			
Nationality		Gender Male	Female
Citizen of UAE	Documentation incomplete	9 (3.2%)	6 (2.1%)
	BSP psychiatrist	44 (15.4%)	27 (9.5%)
	Prison psychiatrist	14 (4.9%)	0 (0.0%)
	Refused follow-up	1 (0.4%)	1 (0.4%)
	CDU as needed	12 (4.2%)	0 (0.0%)
	Follow up not required	1 (0.4%)	0 (0.0%)
	BSP psychologist	0 (0.0%)	2 (0.7%)
	BSP CCMT	2 (0.7%)	1 (0.4%)
	GP/ Primary Health Care	1 (0.4%)	1 (0.4%)
	BSP psychometry	1 (0.4%)	0 (0.0%)
	SKMC ED (acutely ill)	0 (0.0%)	2 (0.7%)
	Total	85 (29.8%)	40 (14.0%)
Citizen of other country	Documentation incomplete	4 (1.4%)	4 (1.4%)
	BSP psychiatrist	51 (18.0%)	23 (8.1%)
	To follow up in home country	37 (13.0%)	14 (4.9%)
	Prison psychiatrist	17 (6.0%)	3 (1.1%)
	Follow up not required	0 (0.0%)	1 (0.4%)
	BSP psychologist	0 (0.0%)	1 (0.4%)
	BSP Day Centre	1 (0.4%)	0 (0.0%)
	GP/ Primary Health Care	1 (0.4%)	0 (0.0%)
	BSP psychiatrist & psychologist	0 (0.0%)	1 (0.4%)
	SKMC ED (acutely ill)	2 (0.7%)	0 (0.0%)
	Total	113 (39.6%)	47 (16.5%)
	Total	198 (69.5%)	87 (30.5%)
Follow-up appointment kept within one month of discharge			
Nationality		Gender Male	Female
Citizen of UAE	Appointment made	47	30
	Appointment kept	35	21
	% appointments kept	74.5%	70%
Citizen of other country	Appointment made	52	25
	Appointment kept	34	19
	% appointments kept	65.4%	76%
Total % appointments kept		69.7%	72.7%

4. Discussion

This is the first study to describe the sociodemographic and clinical characteristics as well as discharge dispositions of adult patients using a psychiatric service in the UAE.

4.1.Socio-demographic characteristics of sample

4.1.1. Age

Most patients (n=190, 66.7%) were aged 20-39 years. Emirati males and those from other countries have similar age distributions in this patient population, peaking at 24-29 years. However, Emirati males most commonly presented between the ages of 20-24 years, while for ex-patriates this extended across the ages 20 to 34 years. Emirati and ex-patriate women were most commonly aged 25-29 years.

The younger age of patients in this study is consistent with Abu Dhabi's general population pyramid (HAAD, 2013). It is also consistent with the findings of the Global Burden of Diseases Study (Mokdad et al, 2016) which clearly demonstrated that globally, the largest burden of mental illness is borne by those aged 20-29 years. The delayed peak in the age of women can possibly be explained by a delay in the onset of presentation of a first episode of mental illness in women and is similar to that described by Ballerini et al (2007) in their examination of characteristics of adults admitted to Italian acute hospital psychiatric wards.

4.1.2. Gender

While the patient population in this study reflects the emirate's age pyramid, it does not follow the gender curve. Emirati males were twice as likely to be admitted to BSP, despite Abu Dhabi's population being split almost equally in terms of gender. Among

citizens of other countries, males were 2.4 times more likely to be admitted, more closely reflecting the population ratio of 2.2 males to 1 female (SCAD, 2016).

The lower than expected numbers of females admitted to BSP may be due to gender-related barriers (e.g. prohibition against women in traditional families being outside the family home), employer power and preference (e.g. female ex-patriate housemaids who need help being kept away from health services) and/ or stigma (e.g. harming marital prospects of siblings). Given the absence of local prevalence studies, it could also potentially be attributed to gender differences in prevalence and/ or severity. An argument against this hypothesis is that many Emirati women have multiple pregnancies which predisposes women to post-partum depression (Eloul et al, 2009; Ghubash and Eapen, 2009; Green et al, 2006) and that regionally, women carry a larger burden of depression (Mokdad et al, 2014).

4.1.3. Region

While Abu Dhabi region accounts for 61% of the emirate's population (SCAD, 2016), its residents are over-represented in the BSP population at 87%. Al Ain, which has 26.8% of the population, contributed 3.5% of admissions and Western region (at 12.8% population) similarly 3.5%. The low number of Al Ain residents is an expected finding, given the presence of a SEHA psychiatric service in that city.

However, there are no in-patient services in Western Region and Abu Dhabi is their referral center. Worth noting is that admission to BSP from the Western Region's was evenly split between males and females, while the regional male to female population is 5.5: 1. It is beyond the scope of this study to explain this. It is possible that factors

contributing to reduced service use are the extreme distances that need to be covered (and the associated cost), that only very serious cases are referred to BSP, that persons with identified mental disorders are repatriated without accessing BSP and that those who require psychiatric services are receiving treatment as out-patients or as in-patients in general hospital beds.

4.2. Clinical characteristics

4.2.1. History of service use: high frequency users (HFUs)

Service use history is detailed in Table 10. In this study where HFUs were defined as having three or more admissions in five years, 20.7% of the sample met this criterion within five years and 17.9% met this within three years. The median length of stay for HFUs was 10.0 days with a mean of 15.86 days, similar to the general study population's median of 10.0 and mean of 16.8 days. Most commonly, and consistent with the literature, patients who were high users of the service had a severe mental illness diagnosis of Mood [affective] Disorders (42.4%) or Schizophrenia, schizotypal or delusional Disorders (45.8%).

It was anticipated that this study would find that most expatriate HFUs would be women, accounted for by being the wives or daughters of their male relations who served as sponsors, despite 61.4% of the admitted expatriate population being male. However, males accounted for 76.0% of the expatriate HFUs. This suggests, given how residency status is conferred, that expatriate males with severe mental disorders are sponsored by, and thus reside with, at least one family member.

Since eligibility to act as a sponsor is dependent on having secure employment and being younger (and thus in the family-building years), it is likely that a male family member serves as the sponsor and primary care giving for these patients is delivered by female relatives. In the absence of community mental health services and a system supportive of patients living outside the family home, it is reasonable to assume that admission to the psychiatric service may be used by the family as a means to procure respite or support.

Various authors have described groups of high frequency users (HFUs), generally as a homogeneous group characterized by gender (male), a diagnostic clustering (serious mental illness with chronicity) over a time period in a context of availability of social and/ or clinical resources. It is often associated in the literature with deinstitutionalization (Botha et al, 2009**;** Fisher et al, 1992; Frick et al, 2013; Garrido et al, 2012; Gastal et al, 2000; Korkeila et al, 1998; Kumar et al., 2002; Mousa et al, 2002; Surber et al, 1987; Vandyk et al, 2013). However, these studies were all conducted outside the MENA region. It is likely that the use of modern antipsychotic medications and the move to deinstitutionalize long term patients of psychiatric hospitals while increasing community mental health services has shifted psychiatric care into a modern era in other countries. Without clear descriptions of the context from which those study populations were drawn, one cannot determine if rates of high frequency use are similar across study populations.

Although Abu Dhabi has not gone through a period of deinstitutionalization, some patients in this study's HFU group may share the other characteristics identified by authors of studies of high frequency users of psychiatric services. It is also possible that HFUs in this study were under-represented since some of those repatriated after discharge

may have continued to use the service had they stayed (approximately 25% of this study's population was lost to follow-up).

One can hypothesize that the patients falling in the HFU category do not represent a homogeneous group, but are rather a blending of different groups. While ostensibly mirroring HFU groups described in the literature, in the absence of deinstitutionalization, the pattern of recurrent admissions seen in Abu Dhabi may reflect the absence of specific services needed by those in this group of patients or it may be an indicator that treatment provided by the service was of low quality and thus ineffective. It could also potentially be that in the absence of support to families, admission was used as a form of respite. These factors may similarly explain why 17.2% of patients were readmitted within six months of their previous admission

4.2.2. Access to an admission unit

4.2.2.1. Referral source

While this study clearly demonstrates the contribution that families and friends/ colleagues make in supporting patients in crisis to access services (46.0% were brought to the service by this means), it also highlights the role the police play in supporting access to mental health services for those in crisis (26% of those admitted). The use of the police as a facilitator of access to psychiatric services is recognized by Kronfol (2012) as a regional phenomenon where, in the absence of adequate appropriate services, pre-hospital crisis care is often devolved to the police.

Among Emirates, it may be that the reason for police involvement being less among females is due to gender and power issues within the family and broader society (e.g. a

powerful male relative may have been able to force compliance by a less powerful female) or the nature of factors precipitating admission (e.g. depression rather than substance withdrawal).

4.2.2.2. Admission point of departure

Most patients accessed the psychiatric service via the emergency department (68.4%). They were, most commonly, discharged with a diagnosis in the group Schizophrenia, schizotypal and delusional disorders (n=108, 55.3%) and Behavioral and emotional disorders with onset usually occurring in childhood and adolescence (n=23, 11.8%). Only nine patients (4.6%) with a diagnosis of depression were admitted via ED. This differs from that reported by Downey et al (2009) who found that the four most common diagnoses of those using an American ED were depression (25%), personality disorder (20%), bipolar disorder (15%) and schizophrenia (13%).

Given how service delivery models differ between countries, comparison of diagnoses may be of little value. Rather, one might reflect on why the ED is used as a point of access to psychiatric services since patients with mental disorders present to the emergency department for more than just admission for mental disorders. Reasons include crisis management of mental disorders, physical conditions (Morphet et al, 2012) and general management of mental disorders where existing services do not meet their needs (Stone et al, 2011). Downey et al (2009) found that most patients reported using the service because they perceived it to be a more accessible way of receiving care. In the Middle East, Kronfol (2012) identified that emergency services are used by many if they

are primary care facilities. This he ascribes to access being barred to those services for reasons that include limited opening times of primary care services, inadequate transport services and unavailability of care for dependents during their operating hours.

Taken together, these factors might similarly explain the use of SKMC's emergency department by patients and their families, especially since the hospital's care standard requires that patients in the emergency department receive a psychiatric consultation within two hours of the referral being submitted. Because this referral is generated as a "crisis consultation for a scarce service", the implication is that the hospital will absorb the consultation cost if the patient's medical insurance does not cover psychiatric services.

4.2.2.3.Psychiatric risk assessment

This study found that aggression/ violence risk was assessed as "low" for 152 (53.3%) patients and not documented for a further 101 (35.4%) patients. Suicide/ self-harm risk was assessed as "low" for 142 (49.8%) of patients and not recorded for 108 (37.9%) patients. This finding must be considered against an understanding of the nature and role of clinical risk assessment in psychiatry. It can be conceptualized as consisting of inter-linked aspects including risks for violence/ aggression, suicide/ self-harm, relapse of mental illness, self-neglect and recidivism i.e. meeting criteria for the revolving door phenomenon (Woods, 2013).

In the initial period of crisis when the patient engages with a psychiatric service, it is ostensibly the initial two risks which are the focus of clinical interest. The aim of a psychiatric assessment serves ultimately to guide the clinician to effectively manage risk,

including through the use of admission to a secure unit until the risk is such that the person may be safely discharged. As articulated by Stowell et al (2012), assessing the potential for risk in the emergency setting is essential to develop an appropriate disposition plan.

Within the initial 24 hours of admission to SKMC and thus BSP, psychiatric risk assessment is focused on the risks of aggression/ violence and suicide/ self-harm. An organizational requirement is that all patients are screened for risk, including those deemed to be vulnerable or at high risk like patients with confirmed or suspected mental and/ or substance use disorders (SKMC policy, 2016). Specifically, for those patients admitted to BSP, a positive risk screen must result in a comprehensive risk assessment conducted by the psychiatrist as part of the initial assessment prior to admission (BSP policy, 2016).

Implied in these SKMC policies, and by the presence of risk assessment tools for both aggression/ violence and suicide/ self-harm in the EMR's initial psychiatric assessment, is that risk assessment upon entry into the SKMC service is conceptualized as having both an actuarial and a structured clinical judgement component. By inference, those responsible for assessing patients and making decisions to admit to the psychiatric service are not only competent to conduct the actuarial part of the assessment, but sufficiently skilled to apply clinical judgement to the decision-making process.

It may be that these risk assessments were conducted but not documented and this gap reflects an overall problem with documentation by psychiatrists. It may also be that because risk was not found it was not documented. But it may as likely indicate that no risk assessment was conducted which raises the question of why patients were admitted

to the psychiatric service. It should be noted that admission decisions outside of the ED are made by specialist and consultant psychiatrists. However, a three-tier system is employed in the ED where the initial assessment is conducted by a junior doctor. If desired, a telephonic consultation is initiated with the on-call specialist who may escalate this to the on-call consultant psychiatrist.

This study did not aim to specifically examine factors associated with patients admitted via ED, nor does it caste any light on those patients assessed in ED who were assessed and discharged. While there may be no difference between risk assessment done by those in ED or via other service access points in terms of proportion, the sheer numbers of patients using ED as a point of mental health service access raises concern as this represents a much larger number of actual patients. The fact that these gaps were found to exist at all is of concern since these patients are being assessed by relatively junior and possibly less experienced clinicians who may not be best equipped to make critical decisions drawing heavily on clinical judgement, a skill that develops over time (Woods, 2013).

4.2.3. Stay in in-patient service

4.2.3.1.Restraint

This study found that, within the initial 24 hours of admission, 34 (11.9%) patients were restrained at least once. Of these, 21 patients were restrained physically with heavy-duty canvas restraints. Given the differences in definitions used in studies on the use of psychiatric restraints reported in the literature as well as the different environments and periods over which events were measured, one is unable to determine a meaningful reference against which to compare this finding.

A recent review of the literature published between 1990 and 2010 examined the prevalence of restraint use across countries and found the prevalence of restraint use in acute psychiatric services to be 6-17%, with studies reported from the USA, UK, Australia, Germany, Finland, Switzerland, Norway and Japan (Beghi et al, 2013). Mind (2013), reporting on the situation in hospitals in the UK, indicated vastly different use of restraints across the country (from 38 to 3346 reported restraint events). In the emergency setting, Simpson et al, (2014) reported a prevalence of 14% in the USA (8-24%) while in Australia Knott et al, (2007) reported its prevalence at 4.1% in Victorian EDs as opposed to 0.04% in Adelaide reported by Gerace et al (2014).

It is worth reflecting on the use of restraint as a tool used by mental health clinicians, especially given the history of violation of human rights of patients with mental disorders in psychiatric hospitals. The professional practice of health care service providers in Abu Dhabi and thus in BSP is framed by their professions' ethical principles. This would be consistent with the medical ethical imperatives of autonomy, non-maleficence and clinical beneficence. In BSP, as in SKMC, written general consent to treatment is required prior to any services being delivered. Treatment is delivered by the appropriate licensed health care provider. Informed consent is one safeguard employed in health services to support ethical practice. In its simplest form, it is the culmination of a process in which a designated health professional explicitly provides the patient with adequate accurate information about a clinical action or plan upon which the patient is able to make a decision of whether to accept the proposed action or not. It implies full disclosure of information, voluntary choice and equal power between the parties (Amer, 2013).

Given that restraint is allowed within both SKMC and BSP, consenting to admission and treatment implies consenting to being restrained. In BSP and SKMC's ED, restraint may take the form of chemical or physical (thick canvas straps applied to the wrists, ankles and waist) restraint or both or involve, in BSP, seclusion in a locked, purpose-built room. That restraint and seclusion must be prescribed by a psychiatrist implies that these practices are deemed to have therapeutic value.

In BSP, chemical and physical restraint is considered a strategy to manage psychiatric risk (BSP policy, 2015). It is thus reasonable to suppose that, like admission into a locked psychiatric ward, it is linked to the initial assessment of risk. That it is used so frequently may thus similarly be an indication of the level of clinical competence of relatively junior staff who act as gatekeepers to the acute psychiatric service and/ or the attitudes of some health care providers working in BSP.

However, an additional explanation suggests itself when one considers when and how patients access the service. Within a context where police are oft-used to facilitate engagement with the service, levels of stigma towards those with mental disorders are high and explanatory models place the causes of mental illness outside a biopsychosocial framework, it is possible that the patient's behavior, rather than an understanding by significant others that they are seeing the symptoms of a mental disorder, is the driver behind presentation to the psychiatric service.

In this instance, early intervention, if any, was likely delivered in the community by providers outside of the formal healthcare service. With these services unable to manage the seriousness of the behavior, labeled in SKMC as psychiatric risk, the person was brought into contact with the psychiatric service because the risk of harm to self or others

was perceived to be greater than any social barriers to accessing care. Thus, it may be that many patients are presenting to the service with a degree of behavior beyond which can be safely managed in the community.

Considering the international literature, this is highly contentious practice (Beghi et al, 2013; Gerace et al, 2014; Hellerstein et al, 2007; Knox & Holloman, 2012; Raguan et al, 2015; Recupero et al, 2011; Sailas & Wahlbeck, 2005; Simpson et al, 2014). There is a high risk of physical and psychological harm for patients (Gerace et al, 2014; Lazzino et al, 2013; Mind, 2013; Recupero et al, 2011) and staff (Holloman & Scott, 2012; Lazzino et al., 2015). Patients subjected to physical restraint report fear of health care providers (Mohr et al, 2004) and traumatic experiences with severe distress (Holloman & Scott, 2012; Mind, 2013). As far back as 1997, the European Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT, 1997) found it to be "rarely justified" and indicated that if used at all, should be manual only as opposed to the use of instruments like straps. Despite this, it remains a feature in many psychiatric services around the world.

4.2.3.2. Diagnoses

4.2.3.2.1. Serious mental disorders (Mood [affective] disorders and Schizophrenia, schizotypal and delusional disorders)

As anticipated, most patients in this study had ICD-9 diagnoses indicative of a serious psychiatric disorder. Most common were Mood disorders (n=84, 29.5%) and diagnoses indicative of psychosis (n=71, 24.9%). When one discounts the sub-group of patients with substance use disorders who is almost exclusively Emirati males, these conditions

were the most common across both genders and among Emiratis as well as citizens of other countries.

Of the 84 patients with a mood disorder diagnosis, 69 (82.1%) were diagnosed with Episodic mood disorders. This finding is similar to that reported from a national Italian cohort by Ballerini et al (2007) who found most commonly, that patients with first admissions to acute psychiatric hospital units had discharge diagnoses consistent with psychoses, mood or substance use disorders. In the United Kingdom, Thompson et al (2004) found that depression with anxiety was the most common diagnostic combination, ahead of schizophrenia and related psychoses and substance misuse.

Studies from within the Middle East reflect similar results. In Saudi Arabia, AbuMadin and Rahim (2002), in their examination of clinical records of 1366 patients over 10 years admitted to psychiatric services in general hospitals, found that 20% were diagnosed with schizophrenia, 10% with bipolar disorder and 10%, mostly female, with major depression. In Sudan (WHO, 2009 in Sharaheeli et al, 2015), most frequently the psychiatric diagnoses of those admitted to psychiatric services was Mood disorders (22%), Schizophrenia (15%) and Substance abuse (10%). Given that depression may, like schizophrenia, follows a chronic disease course (Kessler and Bromet, 2013), it must be considered that those with serious mental disorders and thus will potentially need services across the life-span.

4.2.3.2.2. Substance use disorders

Substance use disorders, with only two exceptions, was exclusively diagnosed among Emirati males. Among this group it was the single most common group of diagnoses

(48.2%), compared to Mood disorders (18.8%) and Schizophrenia, schizotypal and delusional disorders (17.6%). Only one Emirati woman had a substance use disorder diagnosis.

This appears to follow a similar pattern to Saudi Arabian where, in 2012, male patients admitted to Ministry of Health mental hospitals in Saudi Arabia were most commonly diagnosed with Substance abuse (28%) and Schizophrenia (14%). Sharaheeli et al (2015) in their retrospective EMR review of 1777 patients admitted to the Alamal Hospital in Riyadh, a psychiatric and addiction hospital, identified that 83.5% had a diagnosed substance use disorder, 6.9% had schizophrenia and 4.8% had bipolar disorder. Most commonly, those with substance use disorders were aged 21-30 years, 99% were male and 98% were Saudi nationals.

The 41 male Emirati patients in this study ranged in age from 18-53 years and had a mean age of 29.73 years (SD +-9.6) making them younger than that reported in the NRC cohort who had a mean age of 32.4 years (Elkashef et al, 2013). Unlike the 41.3% of NRC patients who used mainly alcohol, only 12.2% were diagnosed with alcohol dependence, as opposed to 36.6% with drug dependence and 51.2% with nondependent abuse of drugs. This may be indicative of the situation described by Alblooshi et al (2016) where those younger than 30 years were more likely to use pharmaceutical opioids like Tramadol and prescription medication for non-medical use like Pregabalin and Procyclidine. Sixty three percent of the BSP patients were discharged on no psychotropic medication which is similar to the 70% reported by Elkashef et al (2013).

4.2.3.2.3. Intellectual disability

A sub-group of fourteen patients' bears mentioning, given that they are likely to need life-long, specialized services for complex needs, despite constituting only 4.9% of the total sample. Six of these patients were diagnosed with mental retardation (five had a comorbid psychiatric diagnosis) and a further eight patients were diagnosed with specific nonpsychotic mental disorders due to brain damage (none of whom had comorbid psychiatric diagnoses. Twelve were aged 18 to 29 and the oldest was 49 years. Despite the absence of diagnosed psychiatric disorders, thirteen were discharged on psychotropic medication (six on monotherapy, four on two medications, two on three and one on four). None were referred to a psychologist at discharge.

In the region, Grey et al, (2015) noted that little information is available on the use of psychiatric services by those who are intellectually disabled. In their examination of the records of 537 patients using a psychiatric service in Bahrain, they identified that the principle reason for patients making contact with the service was disturbed behavior. They too found that the treatment of choice was pharmacological with no referral made for psychological or behavioural interventions. Despite 64% of patients being prescribed psychotropic medication, 90% had no psychiatric diagnosis, leading the researchers to suggest that it would be helpful to examine Arab psychiatrists' attitudes and understanding of the causes and interventions appropriate for persons with intellectual disability.

4.2.3.2.4. Dementia

None of the 13 patients aged 60 years and older had a dementia-related psychiatric diagnosis. This is similar to the finding of a previous study conducted among SKMC's general hospital population by the same researcher which lead to a conclusion that a general failure existed among physicians to diagnose this condition (Williams, 2015). Despite this, it remains an unanticipated finding among the acute psychiatric service population, given that the global incidence is 3.1 per thousand for those aged 60-64 years and doubles with every 5.9 years of additional age (Alzheimer's Disease International, 2016). Global doubling of prevalence is expected in the next generation (Banerjee, 2013).

Patients with dementia are largely unstudied in the Middle East, although Hafiz et al (2014) in their description of patients using a psychiatric home-care service in Saudi Arabia, found that 13.4% were diagnosed with dementia, as opposed to 0% in the psychiatric out-patient population. The in-patient population was not examined.

With 60 years being the official retirement age, a likely contributor to the absence of this diagnosis is that citizens of other countries, in relatively good health (as evidenced by their ability to work), repatriate before onset of symptoms which would bring them within the sphere of psychiatry. Despite the relative youth of the Abu Dhabi population, there is a sizable population aged 60 and older, estimated to be 48,438 in 2014 (SCAD, 2016). In 2015 the observed life expectancy in the UAE for males was 74.5 years and for women 78.0 years, lower than the expected life expectancy of 78.5 and 83.8 years respectively (IMHE, 2017).

There are many elderly people notable among the in- and out-patient general medical services of SKMC whose residency is sponsored by their employed children. Given the nature of their health insurance benefits and that SKMC is a major referral center for cardiac, respiratory, rheumatological and renal diseases (and the association between these chronic diseases and mental disorders as well as the clear association of age with dementia), it is reasonable to anticipate that this population should be represented in the in-patient psychiatric service.

This holds true for older Emiratis residing in the Abu Dhabi region who, in addition, have access to the SKMC multi-disciplinary home-care general medical team that delivers community-based services to those discharged from SKMC's in-patient services. It may be that a combination of factors, among them stigma and physician practice, are contributing to this. Whatever the reason, future service development will need to factor in the needs of this group, as well as those who care for them and consider the costs and associated funding of services.

4.2.3.2.5. Psychotropic medication

Polypharmacy is generally conceptualized quantitatively, either in terms of two or more psychotropic medications or two or more of the same class of medication prescribed simultaneously for the same patient (Kukreja et al, 2013). This does not account for the clinical condition of the patient, the clinical thinking of the prescriber not the broader societal context within which the partners in this dyad engage with each other.

Twenty-six patients of the forty-six (16%) discharged on no psychotropic medication were diagnosed with substance use disorders. For the remaining 239 patients, 427

separate medication prescriptions were issued, most notably antipsychotic medications (n=198, representing 46.6% of the total amount prescribed), benzodiazepines (n=98 or 22.9%), mood stabilizers (n=67 or 15.7%) and antidepressants (n=64 or 14.9%).

Sixty-eight patients were prescribed monotherapy (47 were prescribed an antipsychotic, eleven an antidepressant and ten a benzodiazepine). Of the fifty patients prescribed at least two antipsychotic medications in tandem, twenty-five (50.0%) were diagnosed with Schizophrenic disorders (ICD-9 code 295) and a further seventeen (34.0%) with Episodic mood disorders (ICD-9 code 296). The seventy-one patients with Schizophrenia, schizotypal and delusional disorders (ICD-9 codes 295, 297, 298) received from one to six medications representing antipsychotics, antidepressants, hypnotics, benzodiazepines and mood stabilizers. This prescribing pattern exists despite risks that include poorer quality of life, increased risk for drug interactions, increased risk of side effects, potential decrease in efficacy, increased costs and increased risks of treatment adherence (Chakos et al, 2006; Correll et al, 2012) and evidence suggesting that approximately 50% of those receiving polypharmacy could be successfully converted to monotherapy (Correll et al, 2012).

Considering these findings against those reported in the literature poses a conundrum in that, while literature does exist, the situation within which this study is positioned is substantively different: older studies from HICs address psychotropic medications prescribed to patients in psychiatric hospitals prior to deinstitutionalization. Presumably this means that the contexts in which those medications were prescribed are similar to BSP. However, medications available to prescribers have changed in the interim, as have prescribing patterns. Not only have the number of patients receiving monotherapy

decreased over time (Rittmannsberger et al (2002) in Kukreja et al, 2013) with polypharmacy becoming the norm (Chakos et al, 2006), but patients with schizophrenia, a portion of the population described in this study, may receive polypharmacy in the form of multiple antipsychotics and/ or with a combination of different drug classes.

Prescribing patterns of individual BSP psychiatrists relative to specific patient characteristics were not explored in this study, but may go some way to shedding light on this issue. Certainly, on the face of it, there appears to be differences in practice among psychiatrists. Simpson et al (2015), in their multi-site examination of prescribing practices in the Middle East found differences in prescribing patterns between Egypt, Saudi Arabia and the other Gulf states (Kuwait and UAE). For example, 13% of patients with schizophrenia in the Gulf States received treatment that included a medication other than an antipsychotic which was only true for 2.1% of patients in Saudi Arabia and 2.5% in Egypt. The authors' further report that in the UAE, 47.1% of the time the choice of antipsychotic was based on the personal preference of the psychiatrist and no psychiatrist reported using psychometric rating scales to measure symptom response. This is a particularly disturbing finding when one considers that for 50% to 75% of patients with serious mental disorders, this is a lifelong condition (Torres-Gonzalez, 2009) and, with long-term treatment the best current option for an improved outcome, adherence to treatment is crucial.

4.2.3.2.6. Co-morbid medical diagnoses

Of the sample of 285 patients in this study, 196 (76.8%) had no associated medical condition diagnosed by time of discharge. An additional 21 patients had a medical diagnosis indicating that their admission to the psychiatric service was associated with a

suicide attempt and 2 had a suicide-related diagnosis made while in the service. This is in sharp contrast to results reported by Jones et al (2004) in the USA who found that 74% of patients with serious mental illnesses had at least one medical condition and 50% had at least two. In the UK, Chang et al (2011) reported, that in national sample of 31719 patients with serious mental illnesses aged 15 and older, males lost 8-14.6 years of life and women 9.8-17.5 compared to the national population.

There is clear evidence that mental and substance use disorders pose a significant risk of early death from other medical disorders (Patel et al, 2015). Walker et al (2015), in their review of literature spanning nine countries on six continents quantify this, demonstrating that 8 million deaths worldwide can be attributed to mental disorders each year. While 67.3% of the deaths in people with mental disorders can be attributed to natural causes like chronic medical diseases, 17.5% is due to what the authors identify as unnatural causes like suicide. Their finding that more recent studies are showing higher mortality rates led them to conclude that people with mental disorders are not living longer like those without these disorders. The authors postulate that the mortality rate for this population is 2.2 times that of the general population.

One explanation for the low rates of medical conditions found in this study population is the relative youth of the sample- the mean male age was 32.91 (SD +- 11.2), in contrast to Chang et al (2011) who reported males were 43.1 years (SD +- 14.7). The same held true for females in this study who had a mean age of 34.82 (SD +- 12.1) as opposed to 45.1 years (SD +- 18.0). An additional factor which may help explain this finding is that citizens from other countries working in Abu Dhabi are medically vetted prior to being allowed to enter the country and again every two years as part of the visa renewal

process, making this expatriate population potentially healthier than their counterparts in their countries of origin and the autochthonous population.

Considered along with the findings that only 20.7 percent of patients in this sample were high frequency users, the absence of medical diagnoses associated with serious mental disorders and the relative young age of the sample in this study, the implication is that the majority of patients admitted to BSP are in the early stages of what may potentially evolve into chronic mental disorders. That De Hert et al, (2011), in their review of literature, clearly show that psychotropic medications are strongly associated with chronic physical diseases, makes the issue of effective, appropriate services for these patients a pressing need as well as one with implications for sustainability of the plans which frame the service.

4.3. Discharge

4.3.1. Discharge disposition

Similar to how patients accessed the admission unit, most (n=93, 32.6%) were discharged into the care of their family/ guardian and 72 (25.3%) into the care of the police. Forty-seven (16.5%) left against medical advice. Of these, 29 (61.7%) were Emirati.

The time after a patient is discharged from a psychiatric hospital is generally understood to be a period of high risk (Snow et al, 2009; NICE, 2016) with evidence that the person is especially vulnerable in the initial 30 days' post-discharge with risks that include in-patient readmission and suicide (Durbin et al, 2007; Troister et al, 2008). Meehan et al (2006) demonstrated in a national UK clinical survey that suicide occurred most commonly within two weeks of discharge and was highest on the first day (40%).

This study did not seek to describe the level of risk assessed as part of the discharge decision or mental capacity of the patient assessed at discharge. Until recently, UAE law and regulatory requirements ceded authority over a patient or a female to the sponsor or male relative, hampering attempts by clinicians to intercede on behalf of patients or engage police in supporting patients at high psychiatric risk from disengaging with mental health services.

Recent changes in UAE law prevents a patient or legal guardian from discontinuing an in-patient hospital admission against medical advice unless a risk and capacity assessment has determined that psychiatric risk is low. If the patient, irrespective of gender, and guardian have a difference of opinion, the patient's decision holds sway if she or he is determined to be capable and the psychiatric risk is low. HAAD has subsequently changed its consent guidelines in line with this and endorsed the shifting of power of consent from a senior male family member or spouse to the patient (if married or older than 18 years, irrespective of gender) unless capacity is compromised (Elsheik, 2017).

4.3.2. Follow-up post discharge

Of the 154 patients with plans at discharge indicating the need for further psychiatric services, 145 (94.2%) patients were scheduled to follow-up with a BSP psychiatrist. One hundred and ninety (71.5%) patients kept their out-patient appointments. Male citizens of other countries were lost to follow-up 34.6% of the time as opposed to 24% of female citizens of other countries, 25.5% of Emirati males and 30% of Emirati females.

Given the absence of any local longitudinal studies examining what happens to patients post discharge, one possible explanation is that the females are sponsored by their male relations and so stay in the country, while some males are repatriated upon discharge. A further explanation is that males remain in the country, but fail to stay involved with the service. If this is the case, some possible explanations are that their needs are not consistent with the services offered, that they deny the existence of the need for follow-up, that they conceal their need for follow-up in a bid to stay in their employment or that they do not continue with their medication and thus do not need a further prescription.

Reasons for failure to maintain contact with a service are likely to be as variable as the patients themselves. Certainly, for patients with schizophrenia, Cheng et al, (2014) determined that there was an association with male gender, misuse of at least one substance, being prescribed an atypical antipsychotic and terminating hospitalization against medical advice. Out-patient attendance post discharge has a demonstrable positive impact on patient outcomes, notably by reducing hospital readmission and suicide incidence (Nelson et al (2000) in Pfeiffer et al, 2012). However, no significant impact was demonstrated when this engagement was within seven days of discharge (Pfeiffer et al, 2012).

One hundred and fifty-eight patients of the 160 citizens of other countries had documentation pertaining to post-discharge care. For 51 (32.3%) of them this indicated they were being repatriated and would need to follow up with a psychiatric service in their home countries. None of these plans indicated that either a discharge referral letter was provided or an appointment made on the patient's behalf. None of these patients reappeared in the electronic medical record. For 78% of the males and 93% of the

females in this group, this was their first admission to the Abu Dhabi public mental health service, although they may have accessed other mental health services in this country or elsewhere. Of concern, given the implications related to chronicity, morbidity and mortality, quality of life and impact on families, is that 91.9% of the males and 78.6% of the females were diagnosed with serious mental disorders.

4.4. Strengths and limitations

The primary strengths of this IRB-approved study are that it:

1. Gathered much-needed data quickly on a vulnerable population while complying with ethical guidelines;
2. Used a complete sampling frame, generated by SKMC's Information Technology Department, from which a random sample was collected;
3. Supported the validity of results by following clear guidelines on data abstraction (Appendix 3) which ensured that the protocol was logical and clear, that the order of data abstraction was determined by the structure of the EMR itself and that data was entered into a pre-set form that reflected the EMR;
4. Extraneous, potentially misleading data were not collected e.g. marital status where the patient may not, due to migrant status, live as part of a marital couple;
5. Every tenth case was double-abstracted and checked for intrarater reliability which allowed the researcher to identify problems with variables and potentially reduced variability. The large size of the sample

together with this practice served to offset any possible incorrect data entries by the researcher.

Several limitations should be considered when interpreting the results of this study:

1. It used a cross-sectional, retrospective design, allowing only for descriptions of variables abstracted as secondary data. The EMR from which data was abstracted has a fully integrated patient index, allows for reporting of results, prescribing of treatment and recording of assessments through checklists supported by free text. However, clinical pathways and care plans are not built into the system and do not formally exist as paper documents in BSP. Neither does the current EMR generate evidence-based references and alerts on entries made or require minimum adequate documentation of target symptoms, side effects, treatments or outcomes. Due to the retrospective nature of this study, variation in clinician practice in terms of quality of documentation could not be addressed.

   While psychiatrists diagnose based on set criteria, standardized assessment and diagnostic practices could not be established and were not confirmed through an alternate method like a structured assessment interview. Thus, there was no way to verify that the original clinical notes did not contain errors which arose due to inaccurate documentation by the clinician, accurate documentation of a clinical error in judgement or failure to document clinically relevant data. Since this study collected only data extending back for five years, further errors were not introduced through transcribing of paper records into the EMR.
2. All those younger than 18 years at the time of their last admission in 2015 were excluded. This excluded a segment of BSP service users who are arguably in need

of specialized in-patient services, including those who use substances and young women who are married.

3. Social and clinical variables that could have expanded the understanding of the context of patients (e.g. country of origin and secondary psychiatric diagnosis) were not included. While the expatriate patient population in this study (and the emirate) may seem to be a homogeneous group, this is not an accurate reflection. Rather, this group represents multiple nationalities and a range of socio-economic groups, meaning that care must be taken not to draw assumptions about the larger group.
4. There is an absence of current local (both for Abu Dhabi and the UAE) studies to inform these results and place them in the proper context. Some findings from this study (e.g. gender differences in admissions from Western Region) cannot be meaningfully discussed as no studies are available on general service access, use and patient population characteristics.

5. Conclusions and Recommendations

5.1. Recommendations

This study describes the characteristics of patients admitted to Abu Dhabi city's psychiatric service. By its very nature, given the reality of a treatment gap estimated to be more than 90% in the Eastern Mediterranean Region (WHO, 2012 in Gater and Saeed, 2015), its population accounts for but a small portion of those who need services.

Given that the current service is out of sync with international recommendations pertaining to services for patients with mental disorders which are respectful of human rights, supportive of access to the correct type of service and financially sustainable, it is recommended that actions taken to address this include:

1. Adoption of alternate models of service delivery that include an optimal service mix (WHO, 2001) and balanced care (Thornicroft and Tansella, 2013).
2. Framing a national mental health plan aligned with the regional framework and developing legislation in keeping with WHO guidelines.
3. Delineation by the health regulator of responsibility for service delivery across the public-private mix in Abu Dhabi.
4. Identification and regulation of clinical roles in mental health that extend beyond only psychiatrists. This should include other health professionals as well as those providing informal services like traditional healers.
5. Development of systems to address care of migrants who are discharged from the psychiatric service and repatriated.

6. Developing a clear framework that addresses financing of mental health services that shift the burden from the individual with a mental disorder and her/ his family.
7. Developing and acting on the nationally and locally identified priority for mental health services and research.

To inform appropriate, effective services for all residents, urgent research studies are needed, within the regional, national and local agendas that:

1. Describes groups of patients who suggested themselves as forming distinct sub-populations (including women, adolescents, men and women who are intellectually disabled and those with dementia) and identifies their needs.
2. Informs discharge planning and follow-up service access for migrants who are repatriated and require ongoing mental health support and interventions in other countries.
3. Identifies the needs and engages with those currently not in contact with a mental health service who have existing mental disorders or use other services e.g. private hospitals and general practitioners.
4. Prospectively study service users and their families as they engage with these services and systems.
5. Measures the effectiveness of any forthcoming local mental health model and plan within existing resources like the regional mental health framework.
6. Economically evaluates the current and alternative service and funding models.

7. Tests current evidenced-based interventions within the UAE's multi-cultural context within an understanding of what constitutes access barriers and facilitators.

5.2. Conclusions

There are no recent studies describing the sociodemographic or clinical characteristics of patients admitted to psychiatric services in Abu Dhabi or the UAE. It can be argued that, within the global context, this study is irrelevant as it is conducted in a service out of sync with the well-established practices of deinstitutionalization and the move to community-based care in High Income Countries. By implication, the results of this study may not be generalizable outside of this specific service.

Regrettably, the regional truth makes this study especially relevant, since policy-makers, funders and service planners need to understand this population of service-users as so to inform the development of mental health service delivery models, yet little information is available regionally and locally. No country in the Eastern Mediterranean Region has a mental health plan or policy that is one hundred percent implemented and only 52% of countries have a stand-alone policy or plan which was updated since 2010 (WHO Mental Health Atlas, 2014). Among the region's HICs, the UAE has the highest burden of disease represented by DALYs, the fewest mental hospital beds per 100,000 of the population, no residential beds and no mental health beds in general hospitals. Neither is mental health integrated into community health services.

Although BSP's population is small when compared to the overall SEHA general hospital population, the cost of providing services at this specialized service is high. Mental health

plans developed here, within the regional framework, must be evidence-based, effective and financially sustainable over the long-term. They must also be in line with WHO's recommendation of an "optimal mix" of services (WHO, 2003). This study which not only describes the characteristics of service-users, but highlights the differences between sub-groups of those who use SKMC's psychiatric service, informs future discussions on service development at local and national level.

6. REFERENCES

1. Abou-Saleh, M., Ghubash, R. and Daradkeh, T. (2001). Al Ain Community Psychiatric Survey. I. Prevalence and socio-demographic correlates. *Social Psychiatry and Psychiatric Epidemiology*, 36(1), pp.20-28.
2. Al-Banna, A., Al-Bedwawi, S., Al-Saadi, A., Al-Maskari, F. and Eapen, V. (2008). Prevalence and correlates of conduct disorder among inmates of juvenile detention centres, United Arab Emirates. *La Revue de Santé de la Méditerranée orientale*, 14(5), pp.1054-1059.
3. Alblooshi, H., Hulse, G., El Kashef, A., Al Hashmi, H., Shawky, M., Al Ghaferi, H., Al Safar, H. and Tay, G. (2016). The pattern of substance use disorder in the United Arab Emirates in 2015: results of a National Rehabilitation Centre cohort study. *Substance Abuse Treatment, Prevention, and Policy*, 11(1).
4. Al Garhy, M. (2016). *In-patient beds*. [email].
5. Al Hassani (2015, February). Profile of Mental Health Laws in the UAE. Poster session presented at the 6th SEHA Research Conference, Abu Dhabi, UAE.
6. Alliance for Health Policy and Systems Research World Health Organization. (2010, December). Summary of the National Priority Health Research Workshop presented by Dr. Abdul Ghaffar, Dubai, UAE.
7. Alonso, J. (2012). Burden of mental disorders based on the World Mental Health Surveys. *Revista Brasileira de Psiquiatria*, 34, pp.7-11.
8. Al-Maskari, F., Shah, S., Al-Sharhan, R., Al-Haj, E., Al-Kaabi, K., Khonji, D., Schneider, J., Nagelkerke, N. and Bernsen, R. (2011). Prevalence of Depression and Suicidal Behaviors Among Male Migrant Workers in United Arab Emirates. *Journal of Immigrant and Minority Health*, 13(6), pp.1027-1032.
9. Alzheimer's disease international, (2016). *World Alzheimer Report 2016*.
10. Amer, A. (2013). Informed Consent in Adult Psychiatry. *Oman Medical Journal*, 28(4), pp.228-231.

11. Amr, M., El-Gilany, A., El-Mogy, A. and Fathi, W. Substance abuse and dependence among patients attending an emergency hospital in eastern Nile delta, Egypt. *Journal of Psychiatry,* 17, pp.532-537.
12. Almutairi, A. (2015). Mental illness in Saudi Arabia: an overview. *Psychology Research and Behavior Management*, p.47.
13. Alwan, A. and Saeed, K. (2015). A new agenda for mental health in the Eastern Mediterranean Region. *Eastern Mediterranean Health Journal*, 21(7), p.459.
14. Anbesse, B., Hanlon, C., Alem, A., Packer, S. and Whitley, R. (2009). Migration and Mental Health: a study of low-income Ethiopian women working in middle eastern countries. *International Journal of Social Psychiatry*, 55(6), pp.557-568.
15. Arida, A. (2015). Rapid tranquilization. [Organizational policy]. Sheikh Khalifa Medical City. D-BSP-MD-01-028.
16. Ballerini, A., Boccalon, R., Boncompagni, G., Casacchia, M., Margari, F., Minervini, L., Righi, R., Russo, F., Salteri, A., Frediani, S., Rossi, A. and Scatigna, M. (2007). Main clinical features in patients at their first psychiatric admission to Italian acute hospital psychiatric wards. The PERSEO study. *BMC Psychiatry*, 7(3), pp.1-10.
17. Banerjee, S. (2013). Good news on dementia prevalence—we can make a difference. *The Lancet*, 382(9902), pp.1384-1386.
18. Batniji, R., Khatib, L., Cammett, M., Sweet, J., Basu, S., Jamal, A., Wise, P. and Giacaman, R. (2014). Governance and health in the Arab world. *The Lancet*, 383(9914), pp.343-355.
19. Baxter, A., Patton, G., Scott, K., Degenhardt, L., & Whiteford, H. (2013). Global Epidemiology of Mental Disorders: What Are We Missing?. *PloS ONE*, 8(6).
20. Beghi, M., Peroni, F., Gabola, P., Rossetti, A. and Cornaggia, C. (2013). Prevalence and risk factors for the use of restraint in psychiatry: a systematic review. *Rivista di Psichiatria*, 48(1), p.10-22.
21. Botha, U., Koen, L., Oosthuizen, P., Joska, J. and Hering, L. (2008). Assertive community treatment in the South African context. *African Journal of Psychiatry*, 11, pp.272-275.

22. Chakos, M., Glick, I., Miller, A., Hamner, M., Miller, D., Patel, J., Tapp, A., Keefe, R. and Rosenheck, R. (2006). Special Section on CATIE Baseline Data: Baseline Use of Concomitant Psychotropic Medications to Treat Schizophrenia in the CATIE Trial. *Psychiatric Services*, 57(8), pp.1094-1101.

23. Chang, C., Hayes, R., Perera, G., Broadbent, M., Fernandes, A., Lee, W., Hotopf, M. and Stewart, R. (2011). Life Expectancy at Birth for People with Serious Mental Illness and Other Major Disorders from a Secondary Mental Health Care Case Register in London. *PLoS ONE*, 6(5), p.e19590.

24. Cheng, K., Huang, C., Tsang, H. and Lin, C. (2014). Factors related to missed first appointments after discharge among patients with schizophrenia in Taiwan. *Journal of the Formosan Medical Association*, 113(7), pp.436-441.

25. Chisholm, D., Sweeny, K., Sheehan, P., Rasmussen, B., Smit, F., Cuijpers, P. and Saxena, S. (2016). Scaling-up treatment of depression and anxiety: a global return on investment analysis. *The Lancet Psychiatry*, 3(5), pp.415-424.

26. Ciftci, A., Jones, N. and Corrigan, P. (2013). Mental Health Stigma in the Muslim Community. Journal of Muslim Mental Health, [online] 7(1). Available at: http://hdl.handle.net/2027/spo.10381607.0007.102.

27. Correll, C. and Gallego, J. (2012). Antipsychotic Polypharmacy. *Psychiatric Clinics of North America*, 35(3), pp.661-681.

28. Corrigan, P. and Rao, D. (2012). On the Self-Stigma of Mental Illness: Stages, Disclosure, and Strategies for Change. *Canadian Journal of Psychiatry*, 57(8), pp.464–469.

29. De Hert, M., Correll, C., Bobes, J., Cetkovich-Bakmas, M., Cohen, D., Asai, I., Detraux, J., Gautam, S., Möller, H., Ndetei, D., Newcomer, J., Uwakwe, R. And Leucht, S. (2011). Physical illness in patients with severe mental disorders: Prevalence, impact of medications and disparities in health care. *World Psychiatry*, 10(1), pp.52-77.

30. Dervic, K., Amiri, L., Niederkrotenthaler, T., Yousef, S., Salem, M., Voracek, M. and Sonneck, G. (2012). Suicide rates in the national and expatriate population in Dubai, United Arab Emirates. *International Journal of Social Psychiatry*, 58(6), pp.652-656.

31. DeSousa, A., Phirke, M., Sathe, H., Shah, N., Sonavane, S. and Bharati, A. (2015). Retrospective chart review of elderly patients receiving electroconvulsive therapy in a tertiary general hospital. *Journal of Geriatric Mental Health*, 2(2), p.102.
32. Eder, C., Fullerton, J., Benroth, R. and Lindsay, S., (2005). Pragmatic strategies that enhance the reliability of data abstracted from medical records. *Applied Nursing Research*, 18, pp.50–54.
33. Egbe, C., Brooke-Sumner, C., Kathree, T., Selohilwe, O., Thornicroft, G. and Petersen, I. (2014). Psychiatric stigma and discrimination in South Africa: perspectives from key stakeholders. *BMC Psychiatry*, 14(1).
34. Elkashef, A., Zoubeidi, T., Thomas, R., Al Hashmi, H., Lee, A., Aw, T., Blair, I., Al Arabi, H. and Alghafri, H. (2013). A profile of patients with substance use disorders and treatment outcomes: A 10-year retrospective study from the National Rehabilitation Center. *International Journal of Prevention and Treatment of Substance Use Disorders*, 1(1).
35. Eloul, L., Ambusaida, A. and Al-Adawi, S. (2009). Silent epidemic of depression in women in the Middle East and North Africa region. *Sultan Qaboos University Medical Journal*, 9, pp.5-15.
36. Elsheik, A. (2017). Forensic Psychiatry. [PowerPoint presentation]. *BSP CME series.* Behavioral Sciences Pavilion, SKMC [28 February 2017].
37. Fargues, P. (2011). International Migration and the Demographic Transition: A Two-Way Interaction. *International Migration Review*, 45(3), pp.588-614.
38. Fekadu, A., Desta, M., Alem, A. and Prince, M. (2007). A descriptive analysis of admissions to Amanuel Psychiatric Hospital in Ethiopia. *Ethiopian Journal of Health Development*, 21(2).
39. Findley, T. and Daum, M. (1989). Research in Physical Medicine and Rehabilitation. *American Journal of Physical Medicine & Rehabilitation*, 68(3), pp.150-157.
40. Fisher, W., Dorwart, R., Schlesinger, M., Epstein, S. and Davidson, H. (1992). The Role of General Hospitals in the Privatization of Inpatient Treatment for Serious Mental Illness. *Psychiatric Services*, 43(11), pp.1114-1119.
41. Fox, N., Hunn, A., Mathers, A. (2009). Sampling and Sample Size Calculation. Nottingham: NIHR RDS for the East Midlands / Yorkshire & the Humber.

42. Frick, U., Frick, H., Langguth, B., Landgrebe, M., Hubner-Liebermann, B. and Hajak, G. (2013). Correction: The Revolving Door Phenomenon Revisited: Time to Readmission in 17'415 Patients with 37'697 Hospitalisations at a German Psychiatric Hospital. *PLoS ONE*, 8(12).

43. Funk, M. and Drew, N. (2015b). Mental health legislation. *Eastern Mediterranean Health Journal*, 21(7), p.527-530.

44. Funk, M. and Drew, N. (2015a). Mental health policy and strategic plan. *Eastern Mediterranean Health Journal*, 21(7), p.522-526.

45. Funk, M., Saraceno, B. and Pathare, S. (2003). Organization of services for mental health. Geneva.

46. Garrido, P. and Saraiva, C. (2012). P-601 - Understanding the revolving door syndrome. In: *The 20th European Congress of Psychiatry*. Prague: European Psychiatric Association.

47. Gastal, F., Andreoli, S., Quintana, M., Gameiro, M., Leite, S. and McGrath, J. (2000). Predicting the revolving door phenomenon among patients with schizophrenic, affective disorders and non-organic psychoses. *Revista de Saúde Pública*, 34(3), pp.280-285.

48. Gater, R., Chew, Z. and Saeed, K. (2015). Situational analysis: preliminary regional review of the Mental Health Atlas 2014. Eastern Mediterranean Health Journal, 21(7), pp.467-476.

49. Gater, R., Chisholm, D. and Dowrick, C. (2015). Scaling-up treatment of depression and anxiety: a global return on investment analysis. Mental health surveillance and information systems. *Eastern Mediterranean Health Journal*, 21 (7), pp. 512-516.

50. Gater, R., Saeed, K. and Rahman, A. (2015). From plan to framework: the process of developing the regional framework to scale up action on mental health in the Eastern Mediterranean Region. *Eastern Mediterranean Health Journal*, 21(7), pp.464.

51. Gater, R. and Saeed, K. (2015). Scaling up action for mental health in the Eastern Mediterranean Region: an overview. *Eastern Mediterranean Health Journal*, 21(7), pp.535-545.

52. Gearing, R., Irfan, A., Barber, J., and Ickowicz, A., (2006). A Methodology for Conducting Retrospective Chart Review Research in Child and Adolescent Psychiatry. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 15(3), pp.126-134.

53. Gerace, A., Pamungkas, D., Oster, C., Thomson, D. and Muir-Cochrane, E. (2014). The use of restraint in four general hospital emergency departments in Australia. *Australasian Psychiatry*, 22(4), pp.366-369.

54. Ghaffar, A. (2010). Summary of the National Priority Health Research Workshop. In: *National Priority Health Research Workshop*. Dubai: Statistics and Health Research Centre of the Ministry of Health, of the United Arab Emirates.

55. Gholizadeh, L., DiGiacomo, M., Salamonson, Y. and Davidson, P. (2011). Stressors influencing Middle East women's perceptions of cardiovascular disease: a focus group study. *Health Care for Women International*, 32, pp.723-745.

56. Ghubash, R., El-Rufaie, O., Zoubeidi, T., Al-Shboul, Q. and Sabri, S. (2004). Profile of mental disorders among the elderly United Arab Emirates population: sociodemographic correlates. *International Journal of Geriatric Psychiatry*, 19, pp.344-351.

57. GBD 2013 Mortality and Causes of Death Collaborators (2015). Global, regional, and national age–sex specific all-cause and cause-specific mortality for 240 causes of death, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, 385, pp.117-171.

58. Global burden of disease study 2013 collaborators, (2015). Global, regional, and national incidence, prevalence and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, 386, pp.743- 800.

59. Green, K., Broome, H. and Mirabella, J. (2006). Postnatal depression among mothers in the United Arab Emirates: Socio-cultural and physical factors. *Psychology, Health & Medicine*, 11(4), pp.425-431.

60. Graca, J., Klut, C., Trancas, B., Borja-Santos, N. and Cardoso, G. (2013). Characteristics of Frequent Users of an Acute Psychiatric Inpatient Unit: A Five-Year Study in Portugal. *Psychiatric Services*, 64(2), pp.192-195.

61. Graham, E., Jordan, L. and Yeoh, B. (2014). Parental migration and the mental health of those who stay behind to care for children in South-East Asia. *Social Science and Medicine.* 132, pp.225-235.

62. Gregory, K. and Radovinsky, L. (2012). Research strategies that result in optimal data collection from the patient medical record. *Applied Nursing Research*, 25, pp.108–116.

63. Grey, I., Al-Saihati, B., Al-Haddad, M. and McClean, B. (2013). Reasons for referral, intervention approaches and demographic characteristics of clients with intellectual disability attending adult psychiatric outpatient services in the Kingdom of Bahrain. *Journal of Intellectual Disability Research*, 59(2), pp.186-192.

64. Haagsma, J., Graetz, N., Bolliger, I., Naghavi, M., Higashi, H., Mullany, E., Abera, S., Abraham, J., Adofo, K., Alsharif, U., Ameh, E., Ammar, W., Antonio, C., Barrero, L., Bekele, T., Bose, D., Brazinova, A., Catalá-López, F., Dandona, L., Dandona, R., Dargan, P., De Leo, D., Degenhardt, L., Derrett, S., Dharmaratne, S., Driscoll, T., Duan, L., Petrovich Ermakov, S., Farzadfar, F., Feigin, V., Franklin, R., Gabbe, B., Gosselin, R., Hafezi-Nejad, N., Hamadeh, R., Hijar, M., Hu, G., Jayaraman, S., Jiang, G., Khader, Y., Khan, E., Krishnaswami, S., Kulkarni, C., Lecky, F., Leung, R., Lunevicius, R., Lyons, R., Majdan, M., Mason-Jones, A., Matzopoulos, R., Meaney, P., Mekonnen, W., Miller, T., Mock, C., Norman, R., Orozco, R., Polinder, S., Pourmalek, F., Rahimi-Movaghar, V., Refaat, A., Rojas-Rueda, D., Roy, N., Schwebel, D., Shaheen, A., Shahraz, S., Skirbekk, V., Søreide, K., Soshnikov, S., Stein, D., Sykes, B., Tabb, K., Temesgen, A., Tenkorang, E., Theadom, A., Tran, B., Vasankari, T., Vavilala, M., Vlassov, V., Woldeyohannes, S., Yip, P., Yonemoto, N., Younis, M., Yu, C., Murray, C., Vos, T., Balalla, S. and Phillips, M. (2015). The global burden of injury: incidence, mortality, disability-adjusted life years and time trends from the Global Burden of Disease study 2013. *Injury Prevention*, 22(1), pp.3-18.

65. Hafiz, A., Fahmy, A., Ibrahim, S. and Saleh, G. (2014). Demographic characteristics of users of psychiatric home care in patients suffering from psychiatric morbidities at al-Madina al-Munawara KSA. *American Journal of Research Communication*, 2(10), pp.276-286.

66. Haque, A., Namavar, A. and Breene, K. (2015). Prevalence and Risk Factors of Postpartum Depression in Middle Eastern/Arab Women. *Journal of Muslim Mental Health*, 9(1).

67. Haskins, L. and al Athar, S. (2016). Assessment of patients. [Organizational policy]. Sheikh Khalifa Medical City. C-MD-GEN-01-001.

68. Health Authority Abu Dhabi, (2010). CVD Preventive health measures and public health: the role of primary care. https://www.haad.ae/CME/LinkClick.aspx?fileticket=u-GO5_LDri4= [Accessed 11 February 2017].

69. Health Authority Abu Dhabi, (2013). Health Statistics 2012. [online] Available at: https://www.haad.ae/HAAD/LinkClick.aspx?fileticket=gzx_WUkD27Y%3d&tabid=1516 [Accessed 9 May 2016].

70. Health Authority Abu Dhabi, (2015). Health Statistics 2014. [online] Available at: https://www.haad.ae/HAAD/LinkClick.aspx?fileticket=gzx_WUkD27Y%3d&tabid=1516 [Accessed 9 May 2016].

71. Health Authority Abu Dhabi, (2016). Capacity Master Plan. [online] Available at: https://www.haad.ae/HAAD/LinkClick.aspx?fileticket=8psUAPCOjsE%3d&tabid=1516 [Accessed 11 November 2016].

72. Hellerstein, D., Staub, A. And Lequesne, E. (2007). Decreasing the Use of Restraint and Seclusion Among Psychiatric Inpatients. *Journal of Psychiatric Practice*, 13(5), pp.308-317.

73. Hilliard, M., Ernst, M., Gray, W., Saeed, S. and Cortina, S. (2012). Adapting pediatric psychology interventions: lessons learned in treating families from the Middle East. *Journal of Pediatric Psychology*, 37(8), pp.882-892.

74. Holmboe, E. and Hawkins, R. (1998). Methods for evaluating the clinical competence of residents in internal medicine: a review. *Annals of Internal Medicine,* 129(1), pp. 42-48.

75. Healthdata.org. (2017). *United Arab Emirates | Institute for Health Metrics and Evaluation*. [online] Available at: http://www.healthdata.org/united-arab-emirates [Accessed 16 Mar. 2017].

76. Jacob, K., Sharan, P., Mirza, I., Garrido-Cumbrera, M., Seedat, S., Mari, J., Sreenivas, V. and Saxena, S. (2007). Mental health systems in countries: where are we now?. *The Lancet*, 370(9592), pp.1061-1077.Jones, D., Macias, C., Barreira, P., Fisher, W., Hargreaves, W. and Harding, C. (2004). Prevalence, Severity, and Co-occurrence of Chronic Physical Health Problems of Persons with Serious Mental Illness. *Psychiatric Services*, 55(11), pp.1250-1257.

77. Kahn, G., Brown, J., Chun, A., and Davidson, B. (2015). Bruce N., Meeker, D., Ryan, P., Schilling, L., Weiskopf, N., Williams, A. and Zozus, M. Transparent Reporting of Data Quality in

Distributed Data Networks. [online] Available at: http://repository.academyhealth.org/egems/vol3/iss1/7 [Accessed 12 Jan. 2017].

78. Karam, E., Mneimneh, Z., Karam, A., Fayyad, J., Nasser, S., Chatterji, S. and Kessler, R. (2006). 12-month prevalence and treatment of mental disorders in Lebanon: a national epidemiological survey. *The Lancet*, 367(9515), pp.1000-1006.
79. Katzenellenbogen, J., Joubert, G. and Abdool Karim, S. 1999, *Epidemiology: a manual for South Africa*. Oxford University Press, Cape Town, Southern Africa.
80. Kayrouz, R., Dear, B., Johnston, L., Gandy, M., Fogliati, V., Sheehan, J. and Titov, N. (2015). A feasibility open trial of guided Internet-delivered cognitive behavioural therapy for anxiety and depression amongst Arab Australians. *Internet Interventions*, 2(1), pp.32-38.
81. Kayrouz, R., Dear, B., Johnston, L., Keyrouz, L., Nehme, E., Laube, R. and Titov, N. (2015). Intergenerational and cross-cultural differences in emotional wellbeing, mental health service utilisation, treatment-seeking preferences and acceptability of psychological treatments for Arab Australians. *International Journal of Social Psychiatry*, 61(5), pp.484-491.
82. Kessler, R. and Bromet, E. (2013). The Epidemiology of Depression Across Cultures. *Annual Review of Public Health*, 34(1), pp.119-138.
83. Kimberlin, C. and Winterstein, A. (2008). Validity and reliability of measurement instruments used in research. *American Journal of Health-System Pharmacy*, 65(23), pp.2276-2284.
84. Kleinman, A. (1988). *The illness narratives: suffering, healing, and the human condition*. New York, Basic Books
85. Kleinman, A., Estrin, G., Usmani, S., Chisholm, D., Marquez, P., Evans, T. and Saxena, S. (2016). Time for mental health to come out of the shadows. *The Lancet*, 387(10035), pp.2274-2275.
86. Knox, D. and Holloman, G. (2012). Use and Avoidance of Seclusion and Restraint: Consensus Statement of the American Association for Emergency Psychiatry Project BETA Seclusion and Restraint Workgroup. *Western Journal of Emergency Medicine*, 13(1), pp.35-40.
87. Koenig, H., Al Zaben, F., Sehlo, M., Khalifa, D., Al Ahwal, M., Qureshi, N. and Al-Habeeb, A. (2014). Mental Health Care in Saudi Arabia: Past, Present and Future. *Open Journal of Psychiatry*, 04(02), pp.113-130.

88. Korkeila JA, Lehtinen V, Tuori T, & Helenius H. (1998). Frequently hospitalised psychiatric patients: A study of predictive factors. Social Psychiatry and Psychiatric Epidemiology, 33(11), 528-534.

89. Kronfol, N. (2012). Historical development of health professions' education in the Arab world. *Eastern Mediterranean Health Journal*, 18(12), p.1157-1165.

90. Kuehner, C. (2017). Why is depression more common among women than among men?. *The Lancet Psychiatry*, 4(2), pp.146-158.

91. Lachman, A., Nassen, R., Hawkridge, S. and Emsley, R. (2012). A retrospective chart review of the clinical and psychosocial profile of psychotic adolescents with co-morbid substance use disorders presenting to acute adolescent psychiatric services at Tygerberg Hospital. *South African Journal of Psychiatry*, 18(02), pp.53-60.

92. Lafta, R. (2016). Health in times of uncertainty. *The Lancet Global Health*, 4(10), pp.e666-e667.

93. Lee, S., Kim, K., Kim, T., Kim, S., Kim, J., Han, C., Song, J. and Paik, J. (2015). Outpatient Follow-Up Visit after Hospital Discharge Lowers Risk of Rehospitalization in Patients with Schizophrenia: A Nationwide Population-Based Study. *Psychiatry Investigation*, 12(4), p.425.

94. Loch, A. (2014). Discharged from a mental health admission ward: is it safe to go home? A review on the negative outcomes of psychiatric hospitalization. *Psychology Research and Behavior Management*, p.137.

95. Lori, N. (2011). National Security and the Management of Migrant Labor: A Case Study of the United Arab Emirates. Asian and Pacific Migration Journal, 20(3-4), pp.315-337.

96. Lozano, R., Naghavi, M., Foreman, K., Lim, S., Shibuya, K., Aboyans, V., Abraham, J., Adair, T., Aggarwal, R., Ahn, S., AlMazroa, M., Alvarado, M., Anderson, H., Anderson, L., Andrews, K., Atkinson, C., Baddour, L., Barker-Collo, S., Bartels, D., Bell, M., Benjamin, E., Bennett, D., Bhalla, K., Bikbov, B., Abdulhak, A., Birbeck, G., Blyth, F., Bolliger, I., Boufous, S., Bucello, C., Burch, M., Burney, P., Carapetis, J., Chen, H., Chou, D., Chugh, S., Coffeng, L., Colan, S., Colquhoun, S., Colson, K., Condon, J., Connor, M., Cooper, L., Corriere, M., Cortinovis, M., de Vaccaro, K., Couser, W., Cowie, B., Criqui, M., Cross, M., Dabhadkar, K., Dahodwala, N., De Leo, D., Degenhardt, L., Delossantos, A., Denenberg, J., Des Jarlais, D., Dharmaratne, S., Dorsey,

E., Driscoll, T., Duber, H., Ebel, B., Erwin, P., Espindola, P., Ezzati, M., Feigin, V., Flaxman, A., Forouzanfar, M., Fowkes, F., Franklin, R., Fransen, M., Freeman, M., Gabriel, S., Gakidou, E., Gaspari, F., Gillum, R., Gonzalez-Medina, D., Halasa, Y., Haring, D., Harrison, J., Havmoeller, R., Hay, R., Hoen, B., Hotez, P., Hoy, D., Jacobsen, K., James, S., Jasrasaria, R., Jayaraman, S., Johns, N., Karthikeyan, G., Kassebaum, N., Keren, A., Khoo, J., Knowlton, L., Kobusingye, O., Koranteng, A., Krishnamurthi, R., Lipnick, M., Lipshultz, S., Ohno, S., Mabweijano, J., MacIntyre, M., Mallinger, L., March, L., Marks, G., Marks, R., Matsumori, A., Matzopoulos, R., Mayosi, B., McAnulty, J., McDermott, M., McGrath, J., Memish, Z., Mensah, G., Merriman, T., Michaud, C., Miller, M., Miller, T., Mock, C., Mocumbi, A., Mokdad, A., Moran, A., Mulholland, K., Nair, M., Naldi, L., Narayan, K., Nasseri, K., Norman, P., O'Donnell, M., Omer, S., Ortblad, K., Osborne, R., Ozgediz, D., Pahari, B., Pandian, J., Rivero, A., Padilla, R., Perez-Ruiz, F., Perico, N., Phillips, D., Pierce, K., Pope, C., Porrini, E., Pourmalek, F., Raju, M., Ranganathan, D., Rehm, J., Rein, D., Remuzzi, G., Rivara, F., Roberts, T., De León, F., Rosenfeld, L., Rushton, L., Sacco, R., Salomon, J., Sampson, U., Sanman, E., Schwebel, D., Segui-Gomez, M., Shepard, D., Singh, D., Singleton, J., Sliwa, K., Smith, E., Steer, A., Taylor, J., Thomas, B., Tleyjeh, I., Towbin, J., Truelsen, T., Undurraga, E., Venketasubramanian, N., Vijayakumar, L., Vos, T., Wagner, G., Wang, M., Wang, W., Watt, K., Weinstock, M., Weintraub, R., Wilkinson, J., Woolf, A., Wulf, S., Yeh, P., Yip, P., Zabetian, A., Zheng, Z., Lopez, A. and Murray, C. (2012). Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. The Lancet, 380(9859), pp.2095-2128.

97. Lozzino, L., Ferrri, C., Large, M., Nielssen, O. and de Giralamo, G. (2015). Prevalence and risk factors of violence by psychiatric acute inpatients: a systematic literature review and meta-analysis. *PloS ONE.* 10(6).

98. Matsumoto, R., Nguyen, L., Weaver, C., Cramer, K., Pollard, S. and Marshalek, P. (2015). Off-label use of transmucosal ketamine as a rapid-acting antidepressant: a retrospective chart review. Neuropsychiatric Disease and Treatment, p.2667.

99. Meehan, J., Kapur, N., Hunt, I., Turnbull, P., Robinson, J., Bickley, H., Parsons, R., Flynn, S., Burns, J., Amos, T., Shaw, J. And Appleby, L. (2006). Suicide in mental health in-patients and

within 3 months of discharge: National clinical survey. *The British Journal of Psychiatry*, 188(2), pp.129-134.

100. Mi, M., Collins, J., Lerner, V., Losina, E. and Katz, J. (2013). Reliability of medical record abstraction by non-physicians for orthopedic research. BMC Musculoskeletal Disorders, 14(1).

101. Midbari, Y., Ebert, T., Kosov, I., Kotler, M., Weizman, A. and Ram, A. (2013). Hematological and Cardiometabolic Safety of Clozapine in the Treatment of Very Early Onset Schizophrenia: A Retrospective Chart Review. Journal of Child and Adolescent Psychopharmacology, 23(8), pp.516-521.

102. Mohit, A. (2001). Mental health and psychiatry un the Middle East: historical development. Eastern Mediterranean Health Journal, 7(3), p.336-347.

103. Mokdad, A., Jaber, S., Abdel Aziz, M., AlBuhairan, F. and AlGhaithi, A. (2014). The state of health in the Arab world, 1990-2010: an analysis of the burden of diseases, injuries, and risk factors. *The Lancet*, 383, pp.309-320.

104. Mokdad, A., Forouzanfar, M., Daoud, F., El Bcheraoui, C., Moradi-Lakeh, M., Khalil, I., Afshin, A., Tuffaha, M., Charara, R., Barber, R., Wagner, J., Cercy, K., Kravitz, H., Coates, M., Robinson, M., Estep, K., Steiner, C., Jaber, S., Mokdad, A., O'Rourke, K., Chew, A., Kim, P., El Razek, M., Abdalla, S., Abd-Allah, F., Abraham, J., Abu-Raddad, L., Abu-Rmeileh, N., Al-Nehmi, A., Akanda, A., Al Ahmadi, H., Al Khabouri, M., Al Lami, F., Al Rayess, Z., Alasfoor, D., AlBuhairan, F., Aldhahri, S., Alghnam, S., Alhabib, S., Al-Hamad, N., Ali, R., Ali, S., Alkhateeb, M., AlMazroa, M., Alomari, M., Al-Raddadi, R., Alsharif, U., Al-Sheyab, N., Alsowaidi, S., Al-Thani, M., Altirkawi, K., Amare, A., Amini, H., Ammar, W., Anwari, P., Asayesh, H., Asghar, R., Assabri, A., Assadi, R., Bacha, U., Badawi, A., Bakfalouni, T., Basulaiman, M., Bazargan-Hejazi, S., Bedi, N., Bhakta, A., Bhutta, Z., Bin Abdulhak, A., Boufous, S., Bourne, R., Danawi, H., Das, J., Deribew, A., Ding, E., Durrani, A., Elshrek, Y., Ibrahim, M., Eshrati, B., Esteghamati, A., Faghmous, I., Farzadfar, F., Feigl, A., Fereshtehnejad, S., Filip, I., Fischer, F., Gankpé, F., Ginawi, I., Gishu, M., Gupta, R., Habash, R., Hafezi-Nejad, N., Hamadeh, R., Hamdouni, H., Hamidi, S., Harb, H., Hassanvand, M., Hedayati, M., Heydarpour, P., Hsairi, M., Husseini, A., Jahanmehr, N., Jha, V., Jonas, J., Karam, N., Kasaeian, A., Kassa, N., Kaul, A., Khader, Y.,

Khalifa, S., Khan, E., Khan, G., Khoja, T., Khosravi, A., Kinfu, Y., Defo, B., Balaji, A., Lunevicius, R., Obermeyer, C., Malekzadeh, R., Mansourian, M., Marcenes, W., Farid, H., Mehari, A., Mehio-Sibai, A., Memish, Z., Mensah, G., Mohammad, K., Nahas, Z., Nasher, J., Nawaz, H., Nejjari, C., Nisar, M., Omer, S., Parsaeian, M., Peprah, E., Pervaiz, A., Pourmalek, F., Qato, D., Qorbani, M., Radfar, A., Rafay, A., Rahimi, K., Rahimi-Movaghar, V., Rahman, S., Rai, R., Rana, S., Rao, S., Refaat, A., Resnikoff, S., Roshandel, G., Saade, G., Saeedi, M., Sahraian, M., Saleh, S., Sanchez-Riera, L., Satpathy, M., Sepanlou, S., Setegn, T., Shaheen, A., Shahraz, S., Sheikhbahaei, S., Shishani, K., Sliwa, K., Tavakkoli, M., Terkawi, A., Uthman, O., Westerman, R., Younis, M., El Sayed Zaki, M., Zannad, F., Roth, G., Wang, H., Naghavi, M., Vos, T., Al Rabeeah, A., Lopez, A. and Murray, C. (2016). Health in times of uncertainty in the eastern Mediterranean region, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013.

105. Mohr, W., Petti, T. and Mohr, B. (2003). Adverse effects associated with physical restraint. *Canadian Journal of Psychiatry*, 48(5), pp.331-337.

106. NeoAcademic. (2017). Intraclass Correlations (ICC) and Interrater Reliability in SPSS. [online] Available at: http://neoacademic.com/2011/11/16/computing-intraclass-correlations-icc-as-estimates-of-interrater-reliability-in-spss/ [Accessed 30 Jan. 2017].

107. Nordstrom, K., Zun, L., Wilson, M., Stiebel, V., Ng, A., Bregman, B. and Anderson, E. (2012). Medical Evaluation and Triage of the Agitated Patient: Consensus Statement of the American Association for Emergency Psychiatry Project BETA Medical Evaluation Workgroup. *Western Journal of Emergency Medicine*, 13(1), pp.3-10.

108. Okasha, T., Matar Tadros, T. and Ramy, H. (2015). Use of second-generation antipsychotics in acute inpatient management of schizophrenia in the Middle East. *Neuropsychiatric Disease and Treatment*, p.915.

109. Okasha, A., Karam, E. and Okasha, T. (2012). Mental health services in the Arab world. *World Psychiatry*, 11(1), pp.52-54.

110. O'Mahony, J. and Donnelly, T. (2012). How does gender influence immigrant and refugee women's postpartum depression help-seeking experiences?. *Journal of Psychiatric and Mental Health Nursing*, 20(8), pp.714-725.

111. Onofa, L. (2014). Clinical and Demographic Profile of Patients Using a Liaison-Psychiatry Service in a General Hospital Setting in Abeokuta, Nigeria. *African Journal of Psychiatry*, 17(01).

112. Osman, O. and Afifi, M. (2010). Troubled Minds in The Gulf: Mental Health Research in the United Arab Emirates (1989-2008). *Asia-Pacific Journal of Public Health*, 22(3 Suppl), pp.48S-53S.

113. Panacek, E. (2007). Performing chart review studies. Air Medical Journal, 26(5), pp.206-210.

114. Patel, V., D. Chisholm., T. Dua, R. Laxminarayan, and M. E. Medina-Mora, editors., (2015). Mental, Neurological, and Substance Use Disorders. Disease Control Priorities volume 4. 3rd ed. Washington, DC: World Bank, pp.29-86.

115. Patel, V., Chisholm, D., Parikh, R., Charlson, F., Degenhardt, L., Dua, T., Ferrari, A., Hyman, S., Laxminarayan, R., Levin, C., Lund, C., Medina Mora, M., Petersen, I., Scott, J., Shidhaye, R., Vijayakumar, L., Thornicroft, G. and Whiteford, H. (2016). Addressing the burden of mental, neurological, and substance use disorders: key messages from Disease Control Priorities, 3rd edition. The Lancet, 387(10028), pp.1672-1685.

116. Pfeiffer, P., Ganoczy, D., Zivin, K., McCarthy, J., Valenstein, M. and Blow, F. (2012). Outpatient Follow-Up After Psychiatric Hospitalization for Depression and Later Readmission and Treatment Adequacy. *Psychiatric Services*, 63(12), pp.1239-1242.

117. Popova, S., Lange, S., Probst, C., Gmel, G. and Rehm, J. (2017). Estimation of national, regional, and global prevalence of alcohol use during pregnancy and fetal alcohol syndrome: a systematic review and meta-analysis. *The Lancet Global Health*.

118. Prince, M., Patel, V., Saxena, S., Maj, M., Maselko, J., Phillips, M. and Rahman, A. (2007). No health without mental health. *The Lancet*, 370(9590), pp.859-877.Public Health in the United Arab Emirates and Ras Al Khaimah. (2015). Sheikh Saud Bin Saqr Al Qasimi Foundation for Policy Research. Available at: http://www.google.ae/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwijlaC_yN

XRAhVHOhQKHTxZDp0QFggaMAA&url=http%3A%2F%2Fwww.alqasimifoundation.com%2Fadmin%2FContent%2FFile-1312201511130.pdf&usg=AFQjCNFLuff-KG04IcIPeZgZcD6pzkTv1g [Accessed 22 Jan. 2017].

119. Qureshi, N., AlHabeeb, and Koenig, H. (2013). Mental health system in Saudi Arabia: an overview. *Journal of Neuropsychiatric Disease and Treatment*, p.1121.

120. Rahman, A. (2015). Integration of mental health into priority health service delivery platforms: maternal and child health services. *Eastern Mediterranean Health Journal*, 21(7), pp.493-497.

121. Raoof, M. (2016). Assessment of patients. [Organizational policy]. Sheikh Khalifa Medical City. D-BSP-MD-01-001.

122. Recupero, P., Price, M., Garvey, K., Daly, B. and Xavier, S. (2011). Restraint and seclusion in psychiatric treatment settings: regulation, case law, and risk management. *Journal of American Academy of Psychiatry and the Law*, 39, pp.465-476.

123. Reisch, L. (2003). Training, Quality Assurance, and Assessment of Medical Record Abstraction in a Multisite Study. American Journal of Epidemiology, 157(6), pp.546-551.

124. Richmond, J., Berlin, J., Fishkind, A., Holloman, G., Zeller, S., Wilson, M., Rifai, M. and Ng, A. (2012). Verbal De-escalation of the Agitated Patient: Consensus Statement of the American Association for Emergency Psychiatry Project BETA De-escalation Workgroup. *Western Journal of Emergency Medicine*, 13(1), pp.17-25.

125. Sadosky, A., Schaefer, C., Mann, R., Bergstrom, F., Baik, R., Parsons, B., Nalamachu, S., Nieshoff, E., Stacey, Tuchman, and Anschel, A. (2013). Burden of illness associated with painful diabetic peripheral neuropathy among adults seeking treatment in the US: results from a retrospective chart review and cross-sectional survey. Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy, p.79.

126. Sailas, E. and Wahlbeck, K. (2005). Restraint and seclusion in psychiatric inpatient wards. *Current Opinion in Psychiatry*, 18(5), pp.555-559.

127. Santini, I., Stratta, P., D'Onofrio, S., De Lauretis, I., Santarelli, V., Pacitti, F. and Rossi, A. (2016). The metabolic syndrome in an Italian psychiatric sample: a retrospective chart review of inpatients treated with antipsychotics. *Rivista di Psichiatria*, 51(1), pp.37-42.

128. Saraceno, B. (2007). Advancing the Global Mental Health Agenda. International Journal of Public Health, 52(3), pp.140-141.

129. Saraceno, B., van Ommeren, M., Batniji, R., Cohen, A., Gureje, O., Mahoney, J., Sridhar, D. and Underhill, C. (2007). Barriers to improvement of mental health services in low-income and middle-income countries. *The Lancet*, 370(9593), pp.1164-1174.

130. Saraceno, B., Gater, R., Rahman, A., Saeed, K., Eaton, J., Ivbijaro, G., Kidd, M., Dowrick, C., Servili, C., Funk, M. and Underhill, C. (2015). Reorganization of mental health services: from institutional to community-based models of care. Eastern Mediterranean Health Journal, 21(7), pp.477-485.

131. Saxena, S., Thornicroft, G., Knapp, M. and Whiteford, H. (2007). Resources for mental health: scarcity, inequity, and inefficiency. *The Lancet*, 370(9590), pp.878-889.

132. Sewilam, A., Watson, A. Kassem, A., Clifton, S., McDonald, M., Lipski, R., Deshpande, S. Mansour, H. and Nimjaonker, V. (2015). Suggested avenues to reduce the stigma of mental illness in the Middle East. *International Journal of Social Psychiatry*, 61(2), pp.111-120.

133. Shah, N and Fargues, P., eds. (2011). Special issue: Migration in the Gulf States: Issues and prospects. Asian and Pacific Migration Journal (APMJ), Vol. 20, Nos. 3-4, pp. 267-502.

134. Sharaheeli, J., Alswaidi, F. and Mandil, A. (2015). Characteristics of Mental Illnesses among Psychiatric Patients Admitted to the Alamal Complex for Mental Health in Riyadh, Saudi Arabia in 2013. *Journal of Psychiatry*, 18(5).

135. Shehzad, W. (2011). Outlining Purposes, Stating the Nature of the Present Research, and Listing Research Questions or Hypotheses in Academic Papers. Journal of Technical Writing and Communication, 41(2), pp.139-160.

136. Shidhaye, R., Lund, C. and Chisholm, D. (2015). Closing the treatment gap for mental, neurological and substance use disorders by strengthening existing health care platforms: strategies for delivery and integration of evidence-based interventions. International Journal of Mental Health Systems, 9(1).

137. Shim, I., Woo, Y., Jun, T. and Bahk, W. (2014). A reevaluation of the possibility and characteristics in bipolar mania with mixed features: A retrospective chart review. Psychiatry Research, 215(2),

138. Simpson, S., Joesch, J., West, I. and Pasic, J. (2014). Risk for physical restraint or seclusion in the psychiatric emergency service (PES). *General Hospital Psychiatry*, 36(1), pp.113-118.

139. Kukreja, S., Kalra, G., Shah, N. and Shrivastava, A. (2013). Polypharmacy in psychiatry: A review. *Mens Sana Monographs*, 11(1), p.82.

140. Sinky, T., Cheyney, M. and Dolcini, M. (2015). "If It Is Written by Allah, There Is Nothing That Can Stop It": Saudi women's breast cancer narratives. Health, Culture and Society, 8(2), pp.60-74.

141. Sonmez, S., Apostopoulos, Y., Tran, D. and Rentrope, S. (2011). Human rights and health disparities for migrant workers in the UAE. Health and Human Rights, 13(2), pp.17-35.

142. Statistics Centre Abu Dhabi, (2016). *Statistical Yearbook of Abu Dhabi 2016*. Abu Dhabi: Statistics Centre, pp.192-199.

143. Steel, Z., Marnane, C., Iranpour, C., Chey, T., Jackson, J., Patel, V. and Silove, D. (2014). The global prevalence of common mental disorders: a systematic review and meta-analysis 1980-2013. *International Journal of Epidemiology*, 43(2), pp.

144. Stein, D., Koenen, K., Friedman, M., Hill, E., McLaughlin, K., Petukhova, M., Ruscio, A., Shahly, V., Spiegel, D., Borges, G., Bunting, B., Caldas-de-Almeida, J., de Girolamo, G., Demyttenaere, K., Florescu, S., Haro, J., Karam, E., Kovess-Masfety, V., Lee, S., Matschinger, H., Mladenova, M., Posada-Villa, J., Tachimori, H., Viana, M. and Kessler, R. (2013). Dissociation in Posttraumatic Stress Disorder: Evidence from the World Mental Health Surveys. Biological Psychiatry, 73(4), pp.302-312.

145. Sterne, J., White, I., Carlin, J., Spratt, M., Royston, P., Kenward, M., Wood, A. and Carpenter, J. (2009). Multiple imputation for missing data in epidemiological and clinical research: potential and pitfalls. *The British Medical Journal*, 338(jun 29 1), pp.b2393-b2393.

146. Stewart, D., Bowers, L. and Warburton, F. (2009). Constant special observation and self-harm on acute psychiatric wards: a longitudinal analysis. *General Hospital Psychiatry*, 31(6), pp.523-530.

147. Stowell, K., Florence, P., Harman, H. and Glick, R. (2012). Psychiatric Evaluation of the Agitated Patient: Consensus Statement of the American Association for Emergency Psychiatry Project BETA Psychiatric Evaluation Workgroup. *Western Journal of Emergency Medicine*, 13(1), pp.11-16.

148. Surber, R., Winkler, E., Monteleone, M., Havassy, B., Goldlinger, S. and Hopkin, J. (1987). Characteristics of High Users of Acute Psychiatric Inpatient Services. *Psychiatric Services*, 38(10), pp.1112-1114.

149. Supreme Council of Health, Qatar, (2013). *Qatar Health Report*. Doha: Directorate of Policy Affairs, pp.9-46.

150. Thompson, A. (2004). Patterns of hospital admission for adult psychiatric illness in England: analysis of Hospital Episode Statistics data. *The British Journal of Psychiatry*, 185(4), pp.334-341.

151. Thornicroft, G. (2007). Most people with mental illness are not treated. *The Lancet*, 370(9590), pp.807-808.

152. Thornicroft, G. and Tansella, M. (2013). The balanced care model: the case for both hospital- and community-based mental healthcare. *British Journal of Psychiatry*, 202, pp.246-248.

153. Thornicroft, G., Alem, A., Dos Santos, R., Barley, E., Drake, R., Gregorio, G., Hanlon, C., Ito, H., Latimer, E., Law, A., Mari, J., Mcgeorge, P., Padmavati, R., Razzouk, D., Semrau, M., Setoya, Y., Thara, R. and Wondimagegn, D. (2010). WPA guidance on steps, obstacles and mistakes to avoid in the implementation of community mental health care. World Psychiatry, 9(2), pp.67-77.

154. Thornicroft, G. and Tansella, M. (2012). The balanced care model for global mental health. Psychological Medicine, 43(04), pp.849-863.

155. Thornicroft, G. and Tansella, M. (2013). The balanced care model: the case for both hospital- and community-based mental healthcare. The British Journal of Psychiatry, 202(4), pp.246-248.

156. To, T., Estrabillo, E., Wang, C. and Cicutto, L. (2008). Examining intra-rater and inter-rater response agreement: A medical chart abstraction study of a community-based asthma care program. BMC Medical Research Methodology, 8(1).

157. Torres- Gonzalez, F. (2009). The gap in treatment of serious mental disorder in the community: a public health problem. *Mental Health in Family Medicine*, 6, pp.71-74.

158. Travers, K., Pokora, T., Cadarette, S. and Mould, J. (2013). Major depressive disorder in Africa and the Middle East: a systematic literature review. *Expert Review of Pharmacoeconomics & Outcomes Research*, 13(5), pp.613-630.

159. Tsang, T. and Elliott, E. (2017). High global prevalence of alcohol use during pregnancy and fetal alcohol syndrome indicates need for urgent action. *The Lancet Global Health*, 5(3), pp.e232-e233.

160. UN General Assembly, *Convention on the Rights of Persons with Disabilities: resolution / adopted by the General Assembly*, 24 January 2007, A/RES/61/106, available at: http://www.refworld.org/docid/45f973632.html [accessed 17 March 2017]

161. United Nations Population Fund, (2015a). *Demographic perspectives on female genital mutilation*. UNFPA.

162. United Nations Population Fund, (2015b). *Shelter from the storm: State of world population 2015*. UNFPA.

163. Vandyk, A., Harrison, M., Van Den Kerkhof, E., Graham, I. and Ross-White, A. (2013). Frequent Emergency Department Use by Individuals Seeking Mental Healthcare: A Systematic Search and Review. *Archives of Psychiatric Nursing*, 27(4), pp.171-178.

164. Vassar, M. and Holzmann, M. (2013). The retrospective chart review: important methodological considerations. *Journal of Educational Evaluation for Health Professions,* 10, p.12.

165. Viergever, R., West, H., Borland, R. and Zimmerman, C. (2015). Health care providers and human trafficking: what do they know, what do they need to know? Findings from the Middle East, Caribbean, and Central America. *Frontiers in Public Health*, 3, p.1-9.

166. Vigo, D., Thornicroft, G. and Atun, R. (2016). Estimating the true burden of mental illness. *The Lancet Psychiatry*, 3(2), pp.171-178.

167. von Elm, E. (2007). The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: Guidelines for Reporting Observational Studies. Annals of Internal Medicine, 147(8), p.573.

168. Wachs, T., Black, M. and Engle, P. (2009). Maternal Depression: A Global Threat to Children's Health, Development, and Behavior and to Human Rights. *Child Development Perspectives*, 3(1), pp.51-59.

169. Wang, P., Aguilar-Gaxiola, S., Alonso, J., Angermeyer, M., Borges, G., Bromet, E., Bruffaerts, R., de Girolamo, G., de Graaf, R., Gureje, O., Haro, J., Karam, E., Kessler, R., Kovess, V., Lane, M., Lee, S., Levinson, D., Ono, Y., Petukhova, M., Posada-Villa, J., Seedat, S. and Wells, J. (2007). Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO world mental health surveys. The Lancet, 370(9590), pp.841-850.

170. Wang, P., Aguilar-Gaxiola, S., AlHamzawi, A., Alonso, J., Andrade, L., Angermeyer, M., Borges, G., Bromet E., Bruffaerts, R., Bunting, B., Caldas de Almeida, J.M., Florescu, S., de Girolamo, G., de Graaf, R., Gureje, O., Haro, J.M., Hinkov, H.R., Hum C., Karam, E., Kovess, V., Lee, S., Levinson, D., Ono, Y., Petukhova, M., Posada-Villa, J., Sagar, R., Seedat, S., Wells, J., Kessler, R. (2011). *Treated and untreated prevalence of mental disorder worldwide.* In G. Thornicroft, G. Szmukler, K. Mueser & B. Drake (Eds.), Oxford Textbook of Community Mental Health (pp.50-66). New York: Oxford University Press.

171. Walker, E., McGee, R. and Druss, B. (2015). Mortality in Mental Disorders and Global Disease Burden Implications. *JAMA Psychiatry*, 72(4), p.334.

172. Weinstock, L., Gaudiano, B., Epstein-Lubow, G., Tezanos, K., Celis-deHoyos, C. and Miller, I. (2014). Medication burden in bipolar disorder: A chart review of patients at psychiatric hospital admission. Psychiatry Research, 216(1), pp.24-30.

173. Whiteford, H., Degenhardt, L., Rehm, J., Baxter, A., Ferrari, A., Erskine, H., Charlson, F., Norman, R., Flaxman, A., Johns, N., Burstein, R., Murray, C. and Vos, T. (2013). Global burden of disease attributable to mental and substance use disorders.

174. Williams, J. (2015). Socio-demographic and clinical characteristics of patients with a psychiatric diagnosis in a general hospital in Abu Dhabi, in possession of the author, Abu Dhabi.

175. Wilson, M., Pepper, D., Currier, G., Holloman, G. and Feifel, D. (2012). The Psychopharmacology of Agitation: Consensus Statement of the American Association for Emergency Psychiatry Project BETA Psychopharmacology Workgroup. *Western Journal of Emergency Medicine*, 13(1), pp.26-34.

176. Woods, P. (2013). Risk assessment and management approaches on mental health units. *Journal of Psychiatric and Mental Health Nursing*, 20, pp.807-813.

177. World Health Organization, (2001). *The World Health Report 2001 - Mental Health: New Understanding, New Hope*. [online] Available at: http://www.who.int/whr/2001/en/ [Accessed 10 Feb. 2017].

178. World Health Organization, (2004). *Promoting mental health: concepts, emerging evidence, practice*. France: WHO.

179. World Health Organization, (2010). *Mental Health Legislation and Human Rights.* (Mental Health Policy and Service Guidance Package). Geneva. World Health Organization, (2013). *Comprehensive mental health action plan 2013–2020.* [online] Available at: http://www.who.int/mental_health/action_plan_2013/en/ [Accessed 10 Feb. 2017].

180. World Health Organization, (2014). *Preventing suicide: a global imperative*. [online] who.int/mental_health/suicide-prevention/world_report.../en/. Available at: http://apps.who.int/iris/bitstream/10665/131056/1/9789241564779_eng.pdf [Accessed 10 May 2016].

181. World Health Organization, (2015). United Arab Emirates: WHO statistical profile. [online] Who.int. Available at: http://www.who.int/gho/countries/are.pdf?ua=1 [Accessed 9 May 2016].

182. WHO EMRO. (2015). No health without mental health. *Eastern Mediterranean Health Journal*, 21(7).

183. World Health Organization. (2008). mhGAP intervention guide. 1st ed. [ebook] Geneva: WHO. Available at: http://www.who.int/mental_health/evidence/mhGAP/en/ [Accessed 12 Mar. 2017].

184. Worster, A. and Haines, T. (2004). Advanced Statistics: Understanding Medical Record Review (MMR) studies. *Academic Emergency Medicine*, 11(2), pp.187-192.

185. Yawn, B. and Wollan, P. (2005). Interrater Reliability: Completing the Methods Description in Medical Records Review Studies. American Journal of Epidemiology, 161(10), pp.974-977.

186. Zeleke, W. and Minaye, A. (2015). Mental Health and Somatic Distress among Ethiopian Migrant Returnees from the Middle East. *International Journal of Mental Health & Psychiatry*, 01(02).

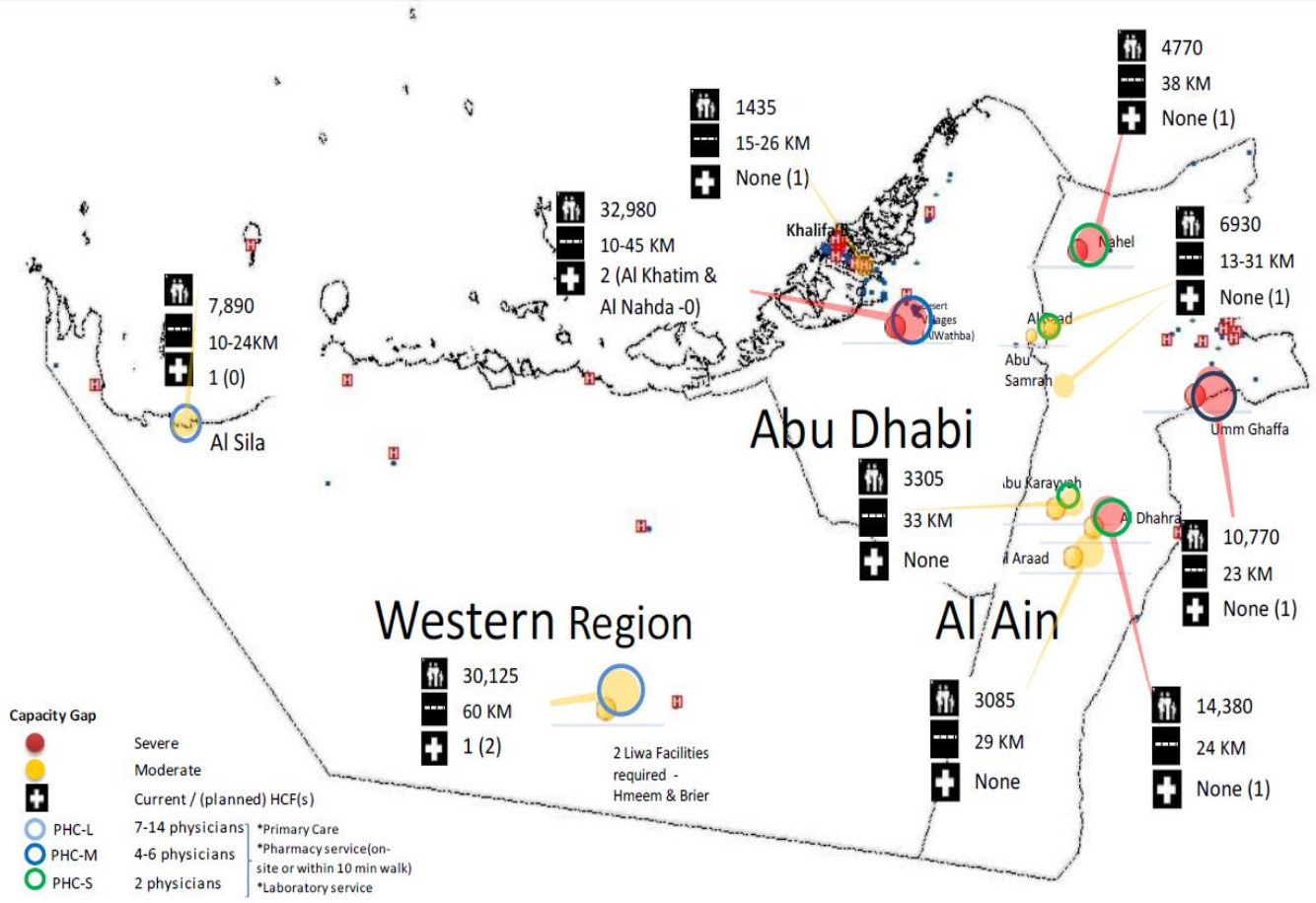
187. 95, E., Dhabi, N., Open, F., Rest, S., Rooster, D., Dubai, S., 2015, I., Community, A., 95, E., Dhabi, N., Open, F., Rest, S. and Rooster, D. (2017). UAE Population by Nationality. [online]

Abu Dhabi - Information Portal. Available at: http://www.abudhabi2.com/uae-population-by-nationality/ [Accessed 29 Jan. 2017].

188. Zozus, M., Pieper, C., Johnson, C., Johnson, T., Franklin, A., Smith, J. and Zhang, J. (2015). Factors Affecting Accuracy of Data Abstracted from Medical Records. *PLoS ONE*, 10(10), p.e0138649.

Appendix 1: Map of the United Arab Emirates

Appendix 2: Map of Abu Dhabi regions (HAAD, 2014)



Appendix 3: Framework for abstracting data from medical records (Zozus el al, 2015):

1. Abstractor Human Resources	yes	no	NA
a. Abstractor qualification •Abstractor familiar with how data are recorded in the medical record •Abstractor experienced in clinical area for which she is abstracting •Abstractor experience abstracting in any clinical area •Abstractor having a clinical credential in the area in which he or she is abstracting •Abstractor having passed a competency test	✓ ✓ ✓ ✓	 ✓	
b. Communication with abstractors •Providing feedback to abstractors, e.g. from periodic review of cases •Ongoing communication with abstractors, e.g. opportunity to discuss difficult cases			✓ ✓
c. Abstractor project specific training •Training abstractors •Ongoing abstractor training			✓ ✓
2. Abstracting environment:	yes	no	NA

•A supportive and positive relationship with local physicians, nurses, and medical records colleagues	✓		
•Minimizing interruptions during abstraction	✓		
•Minimizing time pressure, i.e. limited time in which to abstract	✓		
•Easy access to medical records	✓		
3. Abstraction methods and tools:	yes	no	NA
a. Abstraction process			
•Using data collection forms, i.e. abstraction forms	✓		
•Conducting a pilot study of the abstraction		✓	
•Reviewing the entire or relevant parts/time period of the medical record before abstracting			✓
b. Applying methods that decrease human error			
•Availability of abstraction tools, e.g. guidelines, conventions, definitions	✓		
c. Abstraction guidelines			
•Specifying the location in the medical record where the data element is to be found	✓		
•Prioritizing the locations in the medical record where data elements may be found	✓		
•Documenting inclusion and exclusion criterion defining which cases should be in the study or registry	✓		
•Documenting rules for dealing with missing information	✓		
•An available glossary with synonyms and abbreviations			✓
d. Data element definition			
•Defining each data element	✓		
•Specifying categories to denote unknown information	✓		✓
•Denoting and prioritizing critical data elements			
•Providing conventions describing handling of common problems for each data element	✓		
•Valid values for categorical data elements			✓
•Choosing valid values that resolve minor discrepancies, i.e. broad categories	✓		
•Defining and collecting data elements as structured data rather than free text	✓		
•Defining data elements as raw data, i.e. data that are abstracted directly from medical records	✓		
•Assuring that data elements are routinely documented in medical records	✓		
•Avoiding subjective data elements through definition to make the data element more objective	✓		
•Identifying data elements abstracted less accurately	✓		
•Using data elements that are the original recording	✓		
e. Data collection or abstraction form			
•Using a well-designed data collection form	✓		
•Using the same form at multiple data collection sites			✓
•Listing codes on the data collection form for data elements where the abstractor assigns a code during abstraction	✓		
•Ordering questions on the data collection form following the order in the medical record	✓		
f. Computer use in abstraction			
•Entering data into a computer as the data are abstracted	✓		
•Use of computerized error checks during data entry	✓		
•Use of computerized error checks after data entry for missing	✓		
•Minimizing transcription steps	✓		
•Use of independent data sources to verify data, e.g. checking data against another source of the same data	✓		

Appendix 3(continued): Framework for abstracting data from medical records (Zozus el al.2015):

4. Inherent factors that decrease the accuracy of abstracted data	yes	no	NA
•Error and inconsistency in the medical record			✓
•The practice of providers not documenting results or assessments that are "normal"		✓	
•Missing information	✓		
•Missing charts			✓
•Conflicting information in the medical record		✓	✓
•Illegible information in the medical record		✓	
•Uncertainty in the medical record, i.e. statements such as "possible infarction" rather than a firm diagnosis			
•Variability of documentation practices among clinicians	✓		
•Variability of assessment skills, i.e. of the clinician examining the patient	✓		
5. Aspects of re-abstraction:	yes	no	NA
•Re-abstraction of data		✓	
•Reviewing or re-abstracting a representative selection of cases rather than all of the cases	✓		
•Independent or external re-abstraction, i.e. re-abstraction by someone other than the initial abstractor		✓	

•Periodic re-abstraction throughout the project, i.e. every few months or a few times per year			✓
•Reviewing re-abstraction results, i.e. discrepancies or difficulty areas, with abstractors			✓
•Measurement of inter- or intrarater reliability, i.e. a measure of agreement between two abstractions			✓

Appendix 4. Intrarater reliability for 28 sets of duplicate data (double abstraction of files)

Duplicates pairs	Measure of Agreement: Kappa	Value	Approx. Sig.
1-1:1-2	26 variables	1.000	.000
11-1:11-2	26 variables	1.000	.000
21-1:21-2	26 variables	.888	.000
31-1:31-2	26 variables	1.000	.000
41-1:41-2	26 variables	1.000	.000
51-1:51-2	26 variables	.948	.000
61-1:61-2	26 variables	1.000	.000
71-1:71-2	26 variables	1.000	.000
81-1:81-2	25 variables	1.000	.000
91-1:91-2	25 variables	.837	.000
101-1:101-2	26 variables	.943	.000
111-1:111-2	26 variables	.898	.000
121-1:121-2	26 variables	1.000	.000
131-1:131-2	26 variables	1.000	.000
141-1:141-2	26 variables	1.000	.000
151-1:151-2	26 variables	1.000	.000
161-1:161-2	25 variables	1.000	.000
171-1:171-2	26 variables	.942	.000
181-1:181-2	26 variables	1.000	.000
191-1:191-2	26 variables	1.000	.000
201-1:201-2	26 variables	1.000	.000
211-1:211-2	26 variables	.896	.000
221-1:221-2	26 variables	.945	.000
231-1:231-2	25 variables	1.000	.000
241-1:241-2	26 variables	1.000	.000
251-1:251-2	26 variables	.951	.000
261-1:261-2	26 variables	1.000	.000
271-1:271-2	26 variables	1.000	.000
281-1:281-2	25 variables	1.000	.000

Appendix 5: Protocol for data collection

Open Pg. 2- hide all rows not ending in '1" and abstract data from the 28 visible files only. This is 10% for intrarater reliability. Move to page 1 and abstract 285		
1	unit #	Each clinical file in sample is a consecutive unit- record here as item count 1-285
2	Random record number (RRN)	Each clinical file in sample has a unique random number- identify from random number table and record here
3	KM number	Use RRN to find KM on master list. Each is numbered consecutively in column A- scroll to find RRN and identify KM
1. then open Malaffi chart using KM number		
V1	**Gender:** 0= male 1= female	at top of page, identify
V2	**Age as date of birth**	at top of page, identify
V3	**Age as number at last admission**	at top of page, identify
V4	***Age as collapsed band for analysis:*** *1=15-19/2=20-24/3=25-29/4=30-34/5=35-39/6=40-44/ 7=45-49/8=50-54/9=55-59/10=60-64/11=65-69/12=70-74/1 3=75/ 14=80*	*Collapse into 4-yr age bands after data collected. This variable also to be reported on for IRR.*
2. scroll down to tab PATIENT INFORMATION: this has two tabs for these data		
V5	**Nationality status** 0= Citizen 1= Citizen of other country	Tab 1 (**demographics):** record code for Race (nationality)
V6	**Geographical area of residence** 0= Abu Dhabi 1= Al Ain 2= Western Region 3= other emirate 4= other country	Tab 1 (**demographics):** record code (Address=region). If discrepancy between this data and information in clinical notes, retain this information and state conflict in "comment" note attached to cell. For review at 2-weekly meeting where comment note to be amended. All notes to be addressed after all data collected.
V7	**BSP length of stay in days or part thereof**	Tab 2 (**Visit list**): record number of days as a simple subtraction (use a calendar to count) of discharge days minus admission date.
V8	**Follow-up in BSP-OPD within 1/12 post discharge** 0=no 1=yes	Tab 2 (**Visit list**): record if follow-up appointment with psychiatrist at BSP clinic within one month post LAST DISCHARGE in 2015 as a code
V9	**Number of SEHA ED visits in 6 months prior to index admission**	Tab 2 (**Visit list**): record number of visits, including to KUCC in six months prior to LAST ADMISSION in 2015 as a count
V10	**If YES, discharged in previous 6/12, how many days ago as number**	Tab 2 (**Visit list**): record number of days as a count per calendar days from day prior to last admission order by psychiatrist in 2015 as a count
V11	**Previous admission to psychiatric service** 0= no 1= yes, BSP 2= yes, other SEHA 3= yes, BSP & other SEHA	Tab 2 (**Visit list**): record code for Admissions prior to LAST ADMISSION in 2015 as a count
V12	**Number of previous admissions to BSP in 3 years (including index admission)**	Tab 2 (**Visit list**): record number of admissions prior to LAST ADMISSION in 2015 as a count
V13	***High frequency user: 3*** *0=nil previous 1= 1-2 times in 3yrs, including this admission 2= 3 or more times in 3 yrs., including this admission*	*Collapse into bands after data collected. This variable also to be reported on for IRR.*
V14	***Admissions to SEHA in previous 5 years as a number***	
V15	***High frequency user: 5*** *0=nil previous 1= 1-2 times in 5yrs, including this admission 2= 3 or more times in 5 yrs., including this admission*	
V16	***Number of weeks since previous discharge in six weeks as a collapsed band***	*Tab 2 (**Visit list**): record discharge from BSP in six months prior to LAST ADMISSION in 2015 as a date*

Appendix 5 (continued): Protocol for data collection

3. Scroll down to tab DOCUMENT VIEWING: open ED or OPSC or Liaison psychiatrist consultation note on list immediately above ward admission note in list.		
V17	**Admission point of departure** 0= ED 1= clinic scheduled 2= clinic walk-in 3= home care RN 4= liaison SKMC 5= liaison SEHA	Record as per Psychiatric Consult. If not in consult note, refer to admission note by psychiatrist. If two or more sources, record first as per code. State additional source and brief note in "comment". All notes to be addressed after all data collected.
V17	**Referral source** 0= no record/ 1=self/ 2=family or friends/ 3=police/ 4=other SEHA hospital/ 4= other	Record as per Psychiatric Consult. If not in consult note, refer to discharge summary. If two or more sources, record first as per code. State additional source and brief note in "comment". All notes to be addressed after all data collected.
V18	**Violence/Aggression Risk leve**l as determined by psychiatry in same document as admission order 0= No record 1= low 2= medium 3= high	Code as per assessment recorded during consult
V19	**Suicide Risk level** as determined by psychiatry in same document as admission order 0= No record 1= low 2= medium 3= high	Code as per assessment recorded during consult
4. in DOCUMENT VIEWING: look for ECT administration record.		
V20	**ECT received during admission** 0= No 1= Yes	Record as per code
V21	**Number of ECT sessions received during admission**	Record as a count- each ECT session required separate record
5. in DOCUMENT VIEWING: look at discharge summary.		
7	**Discharge principle psychiatric diagnostic ICD-9 code** 0=No record/record ICD-9 diagnostic codes	If recorded but no ICD-9 code, record as free text- code as per ICD-9 code. If more than one diagnosis, record all these IN THE ORDER THEY APPEAR AND collapse into appropriate band. If mix of bands, select primary discharge diagnosis as code & refer to psychiatric consultant to check
V23	**Discharge principle psychiatric diagnostic code by group Collapse into diagnostic bands as mapped by Dr. Garhy** 0= no record / 1=Organic, including symptomatic, mental disorders (290-294) 2=Mental and behavioral disorders due to psychoactive substance use (303-305) 3=Schizophrenia, schizotypal and delusional disorders(295, 297, 298) 4=Mood [affective] disorders(296,311) 5=Neurotic, stress-related and somatoform disorders(300,308,309) 6=Behavioral syndromes associated with physiological disturbances &physical factors ( ) 7=Disorders of adult personality and behavior (301) 8=Mental retardation (317-319) 9=Disorders of psychological development ( ) 10=behavioral and emotional disorders with onset usually occurring in childhood and adolescence (299,312-316) 11=Unspecified mental disorder (307.9) 12=Psychosexual disorders (302) 13=epilepsy (345) 14=Suicide and self-inflicted behavior (E958.9)	
V24	**Discharge disposition** 0= not stated or unable to determine/ 1= left against medical advice/ 2= discharged to home, self/ 3= discharged to home, care of family/ 4= discharged to acute hospital/ 5= discharged care of police (to prison)/ 6= died/ 7= other	record as per discharge summary
V25	**Referral at discharge** 0= not stated or unable to determine/ 1= to BSP OPC/ 2= to GP/ 3= to prison psychiatrist/ 4= to private health care provider/ 5= BSP day center/ 6= BSP CCMT/ 7= other	record as per discharge summary
V26	**Number of discharge psychotropic medications** as a count	Scroll to heading: **Medication list**, view Active Medication, view ***Ordered.*** If unavailable, use tab

V27	**Discharge psychotropic medications**	MEDICATION LIST (change display to "all medication" & scroll to date of last admission. Find heading Prescription for discharge prescription

Appendix 5(continued): Protocol for data collection

V28	**Discharge psychotropic medications by clas**s 0= antipsychotic 1= antidepressant 2=benzodiazepine 3= mood stabilizer 4= hypnotic 5= other	Record as per code- complete after data abstracted.
V29	**Discharge principle medical diagnosis ICD-9 code**	Record as ICD category
V30	**Discharge principle medical diagnosis per NCD groups** 0=cardiovascular 1= diabetes 2=cancer 3=chronic respiratory 4= other	If more than one diagnosis, record all these IN THE ORDER THEY APPEAR- will be tidied and referred to medical specialist RN for collapsing into bands
6. Open FORM BROWSER. Reset to date prior to index admission. Search for form "RESTRAINT INITIATION"		
V31	**Restraints in first 24hrs of admission as per restraint form** 0=no restraint/ 1=chemical restraint only/ 2=physical restraint only/ 3=physical and chemical restraint	If Restraint initiation form/s, open all and code 3 if any reflect this. If not, code 1 or 2 as per record "type of restraint"
V32	Length of stay in day (as generated in report)	

Appendix 6: Discharge medication classes prescribed by psychiatric diagnostic group

Main psychiatric diagnosis at discharge			
Schizophrenia, schizotypal and delusional disorders		Gender	
		Male	Female
Discharge psychotropic medications	no medication by psychiatrist	0	1
	anti-depressant (AP)	3	0
	anti-psychotic (AP)	12	6
	benzodiazepine (BDZ)	1	0
	AD+AP	4	2
	AD+BDZ	1	0
	AP+AP	6	3
	AP+BDZ	8	2
	AP+mood stabilizer (MS)	3	0
	AP+hypnotic (H)	2	0
	AP+other (O)	1	0
	BDZ+MS	1	0
	AD+AP+AP	1	1
	AD+AP+BDZ	2	2
	AD+BDZ+BDZ	0	1
	AD+BDZ+H	1	0
	AP+AP+AP	0	1
	AP+AP+BDZ	4	1
	AP+AP+MS	1	3
	AP+AP+H	3	0
	AP+BDZ+MS	1	2
	AD+AP+AP+BDZ	1	1
	AD+AP+AP+H	0	1
	AD+AP+BDZ+MS	1	0
	AD+BDZ+BDZ+MS	1	0
	AP+AP+BDZ+BDZ	1	0
	AP+AP+BDZ+MS	3	0
	AP+AP+BDZ+O	1	0
	AP+BDZ+MS+MS	0	1
	AP+AP+BDZ+BDZ+MS	0	1
Main psychiatric diagnosis at discharge			
Neurotic, stress-related and somatoform disorders		Gender	
		Male	Female
Discharge psychotropic medications	no medication by psychiatrist	5	6
	anti-depressant (AP)	2	3
	anti-psychotic (AP)	4	0
	benzodiazepine (BDZ)	4	2
	AD+AP	5	0
	AD+BDZ	1	0
	AD+H	0	1
	AP+BDZ	0	2
	AD+AP+BDZ	1	0
	AP+BDZ+BDZ	1	0
	AD+AP+AP+BDZ	1	0
	AD+AP+BDZ+BDZ	0	1

Appendix 6 (continued): Discharge medication classes prescribed by psychiatric diagnostic group

Main psychiatric diagnosis at discharge			
Mood [affective] disorders		Gender	
		Male	Male
Discharge psychotropic medications	no medication by psychiatrist	2	2
	anti-depressant (AP)	1	4
	anti-psychotic (AP)	5	5
	benzodiazepine (BDZ)	2	0
	mood stabilizer (MS)	0	1
	hypnotic (H)	0	1
	AD+AP	1	2
	AD+BDZ	2	0
	AD+MS	1	0
	AD+H	0	1
	AP+BDZ	7	1
	AP+MS	6	7
	AD+AD+AP	1	0
	AD+AP+BDZ	1	0
	AD+AP+MS	1	0
	AD+AP+H	0	3
	AD+BDZ+BDZ	0	1
	AD+BDZ+H	1	0
	AP+AP+BDZ	3	0
	AP+AP+MS	1	3
	AP+BDZ+BDZ	0	1
	AD+BDZ+H	1	0
	AP+AP+BDZ	3	0
	AP+AP+MS	1	3
	AP+BDZ+BDZ	0	1
	AP+BDZ+MS	5	1
	AP+BDZ+H	2	0
	AD+BDZ+H	1	0
	AP+AP+BDZ	3	0
	AP+AP+MS	1	3
	AD+AP+BDZ+MS	2	0
	AD+AP+BDZ+H	0	1
	AP+AP+BDZ+MS	6	0
	AP+AP+MS+H	2	0
	AP+BDZ+MS+MS	1	0
	AP+BDZ+MS+H	2	0
	AP+AP+BDZ+BDZ+MS+MS	1	0
Main psychiatric diagnosis at discharge			
Mental & behavioural disorders due to psychoactive substance		Gender	
		Male	Female
Discharge psychotropic medications	no medication by psychiatrist	26	0
	anti-depressant (AP)	2	0
	anti-psychotic (AP)	7	0
	mood stabilizer (MS)	1	0
	other (O)	1	0
	AD+AP	1	1
	AP+BDZ	1	0
	AP+H	1	0
	AD+AP+BDZ	1	0
	AP+BDZ+O	1	0

Appendix 7: Discharge ICD-9 codes by diagnostic bands

Diagnostic band	ICD-9 diagnostic code
Organic, including symptomatic, mental disorders	290-294
Mental and behavioral disorders due to psychoactive substance use	303-305
Schizophrenia, schizotypal and delusional disorders	295, 297, 298
Mood [affective] disorders	(296 ,311)
Neurotic, stress-related and somatoform disorders	300, 308, 309
Disorders of adult personality and behavior	(301)
Mental retardation	(317-319)
Disorders of psychological development	
Behavioral and emotional disorders with onset usually occurring in childhood and adolescence	299,312-316
Unspecified mental disorder	307.9
Psychosexual disorders	302
Suicide and self-inflicted behavior	E958.9

Appendix 8: Psychotropic medications by drug class

Antipsychotics	aripiprazole amisulpride clozapine haloperidol	olanzapine paliperidone quetiapine respiridone	trifluoperazine ziprasidone
Antidepressants	clomipramine cipralex duloxetine desvenlafaxine	escitalopram fluoxetine mirtazapine paroxetine	sertraline venlafaxine
Benzodiazepines	alprazolam	bromazepam	lorazepam
Mood stabilizers	carbamazepine lithium	lamotrigine valproic acid	
Hypnotics	zopiclone		
Other	baclofen (muscle relaxant)	promethazine (used for sedative effect)	